

**Minnesota Valley National Wildlife Refuge
Migratory Game Bird, Big Game, and Upland Game 2016 – 2017
Hunt Plan**

August 16, 2016

U.S. Fish and Wildlife Service

**Minnesota Valley National Wildlife Refuge
3815 American Blvd. East
Bloomington, MN 55425**

Submitted By:

Tim Bodeen, Refuge Manager

Date

Concurrence:

_____, Refuge Supervisor, Area 3

Date

Approved:

Charlie Blair, Regional Chief, NWR System

Date

NATIONAL WILDLIFE REFUGE SYSTEM MISSION STATEMENT

“To administer a national network of land and water for the conservation management, and, where appropriate, restoration of the fish and ,wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

MINNESOTA VALLEY NATIONAL WILDLIFE REFUGE MISSION STATEMENT

“To restore, manage, and protect the ecological communities of the Lower Minnesota River Valley and it’s watershed while providing environmental education and wildlife dependent recreation.”

Table of Contents

Summary of Changes from 2015 Hunt Plan.....	1
I. Introduction.....	1
II. Conformance with Statutory Authority.....	2
III. Statement of Objectives.....	5
IV. Assessment.....	5
A. Are wildlife populations present in numbers sufficient to sustain optimum population levels for priority refuge objectives other than hunting?.....	5
B. Is there competition for habitat between target species and other wildlife?.....	10
C. Are there unacceptable levels of predation by target species on other wildlife forms?.....	11
V. Description of Hunting Program.....	11
A. Areas of Refuge that Support Targeted Species.....	11
B. Areas to be opened to hunting.....	11
C. Species to be taken, hunting periods, hunting access.....	16
D. Justification for the permit.....	18
E. Consultation and Coordination with the State.....	18
F. Law Enforcement.....	19
G. Funding and staffing requirements	19
VI. Measures Taken to Avoid Conflicts with Other Management Objectives.....	19
A. Biological Conflicts.....	19
B. Public Use Conflicts.....	20
C. Administrative Use Conflicts.....	20
VII. Conduct of the Hunting Program	20
A. Refuge Specific Hunting Regulations.....	21

B. Anticipated Public Reaction to the Hunting Program.....	23
C. Hunter Application and Registration Procedures	23
D. Description of Hunter Selection Process.....	26
E. Media Selection for Announcing and Publicizing the Hunt.....	26
F. General Requirements.....	26
G. Hunter Requirements.....	27
VIII. Compatibility Determination.....	27
References	28

List of Tables

Table 1: Number of hunt visits by hunting activity for 2014-2015 hunting season.....	5
Table 2: Estimated white-tailed deer population density (deer per square mile) based off aerial surveys.....	8
Table 3: Species proposed to be open to hunting on the Refuge in 2016 and beyond.....	16
Table 4: Refuge hunting seasons that differ from State seasons.....	17

List of Figures

Figure 1: Minnesota Valley National Wildlife Refuge Units.....	4
Figure 2: Refuge Units where a refuge special permit is required to participate in general public hunts.....	13

Appendix

A: Unit Maps.....	30
-------------------	----

This page is intentionally left blank

Summary of changes from 2015 Hunt Plan:

This updated hunt plan originated from a need to include recently acquired tracts in multiple units of Minnesota Valley National Wildlife Refuge. These tracts are adjacent to established units of the Refuge and reflect the hunting management for the adjacent unit. There has been no update to species that can be hunted on the Refuge or Refuge specific regulations from the previous approved Refuge Hunt Plan (2015).

**MINNESOTA VALLEY NATIONAL WILDLIFE REFUGE
MIGRATORY GAME BIRD, BIG GAME, UPLAND GAME, AND
FURBEARER HUNTING PLAN**

I. Introduction

This Hunt Plan is part of the overall Visitor Services Plan for Minnesota Valley National Wildlife Refuge (Refuge). The Hunt Plan identifies how the Refuge will manage public hunting opportunities on Refuge owned or managed lands as identified in the Refuge's 2004 Comprehensive Conservation Plan (CCP) along with lands acquired after the publication of CCP (USFWS 2004).

In general, this plan proposes to open most Refuge-managed lands to recreational hunting and select lands, at select times, to hunts designed to reduce the number of certain wildlife species (e.g., white-tailed deer). This plan proposes that the hunting program generally follows state of Minnesota regulations with respect to species, seasons, limits, and method of take, except in circumstances where we propose to deviate from those regulations to meet Refuge wildlife population, public use, and public safety goals.

The National Wildlife Refuge system was established by the Federal Property and Administrative Service Act of 1949 (40 U.S.C. 471-535), as amended; Fish and Wildlife Coordination Act of 1934 (16 U.S.C. 661-666c) as amended; Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j Stat. 1119) as amended; the Act of May 19, 1948, Public Law 80-537 (16 U.S.C. 667b-667d; 62 Stat. 240) as amended; and The National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended.

The Minnesota Valley National Wildlife Refuge (Refuge) was established by Congress in 1976 through the Minnesota Valley National Wildlife Refuge Act (*Public Law 94-466; October 8, 1976*) (Refuge Act). The 1976 Refuge Act authorized the purchase of 9,500 acres of land for the Refuge. The Refuge Act also acknowledged the presence of the Minnesota Valley State Recreation Area and Trail to be administered by the Minnesota Department of Natural Resources (MNDNR). The approved Refuge acquisition boundary has been revised three times since 1976 to bring the total acreage to 26,018. Currently, about 14,600 acres are managed by the Refuge.

The Minnesota Valley National Wildlife Refuge was established for the following purposes:

- (1) Provide habitat for a large number of migratory waterfowl, fish, and other wildlife species
- (2) To provide environmental education, wildlife recreational opportunities, and interpretive programs for hundreds of thousands of Twin Cities residents
- (3) To protect important natural resource areas from degradation
- (4) To protect the valley's unique social, educational, and environmental assets.

The Refuge consists of 13 Refuge Units. Twelve Units are along a 70 mile reach of the Minnesota River located between historic Fort Snelling and Henderson, Minnesota (Figure 1). The Round Lake Unit, a 152-acre tract containing a lake basin with associated permanent wetlands located in the City of Arden Hills, is administered as a disjunct part of the Refuge.

Nearly 14,600 acres are currently owned in fee title or managed as part of the Refuge. Although the Refuge is the single largest landowner along this portion of the river, the valley itself contains a patchwork of ownerships including private, non-profit organizations, corporations, cities, counties, and lands administered by Minnesota Department of Natural Resources. This mosaic of ownerships offers great opportunities for partnerships but also requires a great deal of coordination and cooperation among all land managers.

Ecological Setting

The Refuge is located in the Mississippi Headwaters/Tallgrass Prairie Ecosystem as currently defined by the Service. This ecosystem is primarily located in Minnesota and North Dakota with small sections extending into Wisconsin and Iowa. This ecosystem occupies a major portion of the Prairie Pothole Region of North America. The Prairie Pothole Region produces 20 percent of the continental waterfowl populations annually.

Historically, this portion of North America was subject to periodic glaciation. Glacial meltwaters were instrumental in forming the five major river systems located or partly located within this ecosystem. These river systems are the Mississippi River, St. Croix River, Red River, Missouri River, and the Minnesota River. Glacial moraines and other deposits resulted in a myriad of lakes and wetlands that are common throughout this area. Significant variation in the topography and soils of the area attest to its dynamic glacial history.

The three major ecological communities within this ecosystem are the tallgrass prairie, the northern boreal forest, and the eastern deciduous forest. Native grasses common to the tallgrass prairie include big bluestem, little bluestem, Indian grass, sideoats grama, and switch grass. Native prairie also supports ecologically important forbs such as prairie coneflower, purple prairie clover, and blazing star. The northern boreal forest is primarily comprised of a variety of coniferous species such as jack pine, balsam fir, and spruce. Common tree species in the eastern deciduous forest include maple, basswood, red oak, white oak, and ash. Current land uses range from tourism and timber industries in the northern forests to intensive agriculture in the historic tallgrass prairie. Of the three major ecological communities, the tallgrass prairie is by far the most threatened with more than 99 percent of it having been converted for agricultural purposes.

Due to its diversity, this ecosystem supports at least 121 species of Neotropical migrants and other migratory birds. It provides breeding and migration habitat for significant populations of waterfowl plus a variety of other waterbirds. The ecosystem supports several candidate species and federally-listed threatened and endangered species including the Northern long-eared bat, Higgins eye pearly mussel, prairie bush clover, dwarf trout lily, and the western prairie fringed orchid. The increasingly rare paddlefish and lake sturgeon are also found in portions of this ecosystem.

II. Conformance with Statutory Authorities

The Refuge Recreation Act of 1962 (16 U.S.C. 460K) authorizes the Secretary of the Interior to administer refuges, hatcheries, and other conservation areas for recreational use. The Refuge Recreation Act requires 1) that any recreational use permitted will not interfere with the primary

purpose for which the area was established; and 2) that funds are available for the development, operation, and maintenance of the permitted forms of recreation.

Fundamental to the management of lands within the National Wildlife Refuge System (System) is the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57), an amendment to the National Wildlife Refuge System Administration Act of 1966. The National Wildlife Refuge System Improvement Act of 1997 (Improvement Act) provided a mission for the System and clear standards for its management, use, planning, and growth. The Improvement Act recognized that wildlife-dependent recreational uses involving hunting, fishing, wildlife observation and photography, and environmental education and interpretation, when determined to be compatible with the mission of the System and purposes of the Refuge, are legitimate and appropriate public uses of the System. Compatible wildlife-dependent recreational uses are the priority general public uses of the System and shall receive priority consideration in planning and management. Hunting is a wildlife-dependent recreational use and the law states that as such, it “shall receive priority consideration in national wildlife refuge planning and management.” The Secretary of Interior may permit hunting on a refuge if it is determined that such use is compatible and will not materially interfere with or detract from the fulfillment of the purposes of the refuge or the mission of the National Wildlife Refuge System.

Shortly after the Refuge was established, the Service prepared its first Hunt Plan. That plan included an Environmental Assessment that evaluated the possibilities and effects of a hunting program on all lands within the Refuge’s congressionally authorized acquisition boundaries. The Refuge’s Hunt Plan and supporting documents were reviewed and updated in 1981, 1984, 1987, 1989, 1991, 2004, 2010, 2011, 2012, and 2015. Changes to the Refuge’s hunting program were published in the Federal Register and the Code of Federal Regulations (50 CFR 32.42) as needed.

In response to the Improvement Act, the Refuge began to develop a CCP in 1999. The CCP was finalized in 2004 and established the management direction for the Refuge and Wetland Management District for the subsequent 15 years. While the CCP provides overall management direction, more detailed “step-down” plans were to be developed to refine Refuge programs and operations (USFWS 2004).

This Hunt Plan is a step-down plan from the Visitor Services Plan. It also “steps down” from the CCP by beginning to implement the CCP’s goals, objectives, and strategies. Those goals, objectives, and strategies were developed within the context of overall Visitor Services. Within the CCP process, the Refuge completed compatibility determinations on hunting uses proposed at that time. These hunting uses, which included big game, upland game, and migratory bird hunting, were determined to be compatible with the National Wildlife Refuge System mission and the Refuge purpose.

Recreational hunting authorized by the regulations will not interfere with the primary purpose for which Refuge was established. This determination is based upon the completion of a Compatibility Determination (Section D).

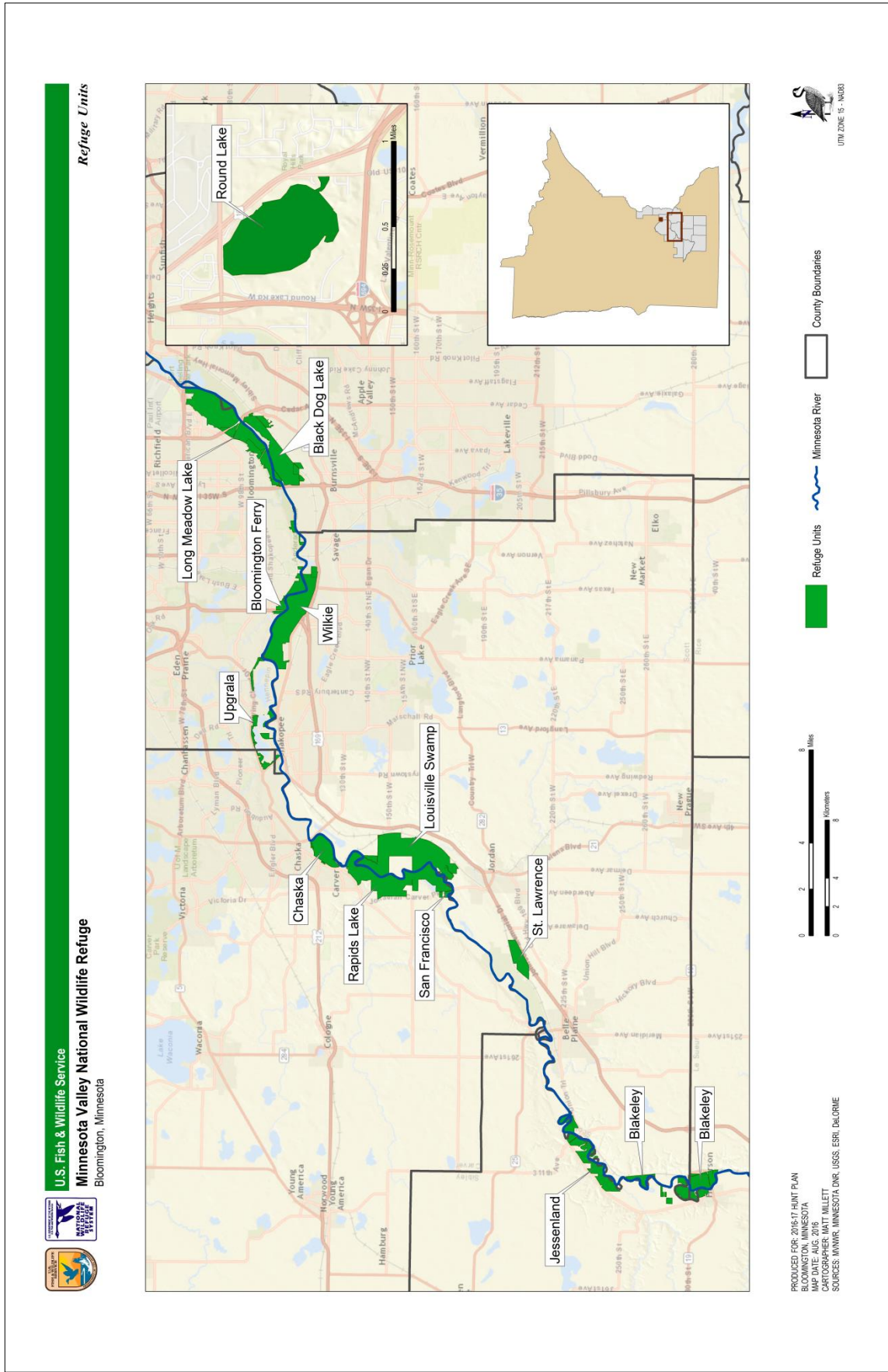


Figure 1: Minnesota Valley National Wildlife Refuge Units

The Refuge has about 251,000 visitors annually. Hunting is the second most popular wildlife-dependent use of the Refuge following wildlife observation. The Refuge had about 17,300 hunting visits in 2014-2015 hunting season (Table 1). The current hunting program's annual cost is around 4% (\$102,103) of the overall annual Refuge operating budget (\$2,600,000).

Table 1: Number of hunt visits by hunting activity for 2014-2015 hunting season.

Hunting activity	Number of visits for the 2014-15 season
Waterfowl	7,500
Big game	5,300
Upland game	4,000
Other migratory birds	500

III. Statement of Objectives

The objectives of a migratory game bird, big game, upland game, and furbearer hunting program on the Minnesota Valley National Wildlife Refuge are to provide:

- (1) Biological diversity by preserving the natural diversity and variety of biotic communities occurring on Refuge lands;
- (2) Aid in managing white-tailed deer populations in the metropolitan area;
- (3) Wildlife-dependent public recreation according to Service policy;
- (4) High quality hunting experiences on the Refuge for area residents.

IV. Assessment

A. Are wildlife populations present in numbers sufficient to sustain optimum population levels for priority refuge objectives other than hunting?

White-tailed deer, waterfowl, waterbirds, aquatic mammals, passerines, and mammalian predators are monitored on the Refuge and surrounding areas by the Service and conservation partners. Fish, amphibians, reptiles, and insects also are monitored, although less frequently.

In Minnesota, species to be hunted, hunting seasons, and the number of animals allowed to be taken are set by the MNDNR. In developing annual hunting regulations the MNDNR considers species population trends, the number of hunters pursuing species, and hunter success rate. Overall, wildlife residing on the Refuge exhibit the same population trends and respond to hunting pressure in the same manner as wildlife elsewhere throughout the State. In some instances, certain species are more abundant in the urban and suburban lands in the Refuge because of abundant food resources, reduced natural predation, and reduced hunting pressure.

The Harvest Information Program (HIP) is an annual program in which hunters provide information that helps biologists manage North America's migratory game bird populations, including woodcock, ducks, geese, rails, snipe, and coot. Hunters' reports on the kind and number of migratory birds they harvest are used to develop reliable estimates of the total harvest of all migratory birds throughout the country. The information gathered by the harvest surveys assists state and federal biologists in making decisions about sustainable bag limits for future hunting seasons. Season lengths and species limits for migratory birds are set at a regional or flyway level to assist in preventing the overharvest of these species.

Hunting was prevalent on private lands that eventually became the Refuge before the Service purchased those lands. At least four hunt clubs either owned or leased private lands for hunting purposes within the Refuge acquisition boundary. Even in the more developed areas surrounding the Refuge Units, many species continue to be hunted on private and other non-Service lands.

Suitable habitat exists on Refuge lands to support hunting as proposed. The viability of the game species populations proposed to be hunted is not expected to be negatively affected by hunting according to State season guidelines. In fact, some hunted species (e.g., white-tailed deer, resident Canada goose) populations have risen substantially and are considered locally overabundant.

a) Migratory Game Birds

Waterfowl

The annual Waterfowl Population Status Report (USFWS 2015) includes data on the 2014 breeding population and production information available for waterfowl in North America and is a result of cooperative efforts by the Service, the Canadian Wildlife Service, various state and provincial conservation agencies, and private conservation organizations. These annual assessments are based on the distribution, abundance, and flight corridors of migratory birds. The 2015 report showed that in the traditional survey area, the total breeding duck population was 49.5 ± 0.8 (SE) million birds. This estimate is similar to the 2014 population estimate (49.2 ± 0.8 (SE) million birds) and 43% above the long term average (USFWS 2015).

Due to well below average rainfall in early spring, much of the state was classified under drought conditions and wetlands were extremely dry, although precipitation later in the breeding season improved wetland conditions. The number of permanent or semi-permanent wetlands decreased 36% compared to 2014, and the number of wetlands were 13% below the long-term averages. The estimated 2015 Minnesota mallard breeding population was 206,000, which was similar to the 2014 estimate of 257,000 mallards and 10% below the long-term average of 228,000. The estimate of total duck abundance in Minnesota for 2015, excluding scaup, was 524,000, which was higher than last year's estimate (474,400), but lower than the long-term average of 618,200 (USFWS 2015).

According to the MNDNR (Dexter 2015) Canada goose (*Branta canadensis*) population estimates were 267,488 in Minnesota, a slight increase from 2014 (261,623). The Mid-continent Population (which includes Minnesota) for light geese, snow geese (*Chen caerulescens*) and Ross's geese (*Chen rossii*), was 3,284,100 light geese (USFWS 2015). This was a 14% decrease from 2014, (3,284,100) but still similar to long term averages. The MNDNR recorded American coot (*Fulica americana*) populations as 9,888 for 2015, compared to the 2014 estimate of 18,984 (Dexter 2015).

American woodcock

The American woodcock (*Scolopax minor*) is a popular game bird throughout eastern North America. The management objective of the Service is to increase populations of woodcock to levels consistent with demands of consumptive and nonconsumptive users (USFWS 1990). The Singing Ground Survey for 2015 indicated that indices for singing American woodcock males in the Central Management Region (which includes Minnesota) are not significantly different from 2014 (Cooper & Rau 2015). The 10-year trend was not significantly different and the fourth straight year that the trend has remained stable (Cooper & Rau 2015).

Mourning dove

The mourning dove (*Zenaida macroura*) is one of the most abundant species in urban and rural areas of North America. The annual harvest is estimated to be between 5% and 10% of the population (Otis et al. 2008). Population assessments such as counts of doves heard are used to monitor mourning dove populations. The resulting information is used by wildlife administrators in setting annual hunting regulations (Seamans 2015). Over their entire range, there has been a dove decline in the last 49 years, but not the most recent 10 years (Seamans 2015). Overall abundance of doves in the Central Management Zone, of which Minnesota is a part, seemed to increase from 2013 to 2014 (Seamans 2015). In Minnesota the number of mourning doves observed in 2014 increased by 20% from 2013. The 2014 dove abundance was 23 % below the 10-year average, and 35% below the long-term average (Dexter 2015).

Other migratory game birds

The natural histories of rails, gallinules, and snipe make it difficult to estimate their populations. Breeding season data for rails and snipe, except Wilson's Snipe, in Minnesota and the Mississippi Flyway indicate that long term populations are more or less stable (Sauer et al. 2014). The 10-year trend for Sora shows a slight decrease, while the 10-year trend for Virginia rails is stable (non-significant increase) based of 2003-2013 data from Breeding Bird Survey (Sauer et al. 2014). Wilson's snipe (*Gallinago delicata*) has a significant decline in its population's trend (Sauer et al. 2014).

b) Big Game

White-tailed deer

White-tailed deer (*Odocoileus virginianus*) represent one of the most important big game mammals in Minnesota. High deer population density can pose serious socio-economic and ecological challenges for wildlife managers, such as deer-vehicle collisions, crop depredation, and forest regeneration concerns (Dexter 2015). Based on annual harvest statistics and research, the MNDNR models deer population levels and develop harvest strategies, season frameworks, and season limits to meet target population goals by permit area. The MNDNR closely monitors the status of deer populations to determine appropriate harvest levels. The 2015 population index (21.2 /100 mi) of white-tailed deer for the entire state of Minnesota was similar to 2014, 33% above the 10-year average, and 98% above the long term average (Dexter 2015). The population rates continue to increase in the Southeast and Metro areas of the state, despite efforts to reduce populations (Dexter 2015). Metro Deer Management Area (601), which encompasses a large area of the Refuge, has no limit on antlerless deer for the 2016 hunting season. In 1989 federal, state, and local resource agencies formed a Minnesota Valley Deer Management Task Force to address deer overpopulation on their interspersed lands. The Task Force set a population goal for the deer herd in the Minnesota River valley at 15-25 deer per square mile (Minnesota Valley Deer Management Task Force 1990).

Aerial surveys estimated deer density on the Long Meadow Lake Unit to be about 29 deer per square mile on January 2016. The same survey also estimated the Bloomington Ferry Unit to have a deer density around 21 deer per square mile. Aerial surveys for deer population density are normally conducted in the winter when deer are concentrated and there is less canopy cover. Deer densities can naturally fluctuate within a year due to deer mobility and seasonal behavior changes, which mean a single population density estimate is not always representative of an area's true deer density value. White-tailed deer densities have fluctuated over the years, but in more urban units like the Long Meadow Lake and Bloomington Ferry Units, the densities generally have been above target densities (Table 2). Other Refuge units near heavily developed areas show similar trends in deer

numbers. Deer have not been surveyed every year, sometimes due to survey conditions (e.g., lack of snow cover) or budget constraints (Minnesota Valley Deer Management Task Force, unpublished).

Table 2: Estimated white-tailed deer population density (deer per square mile) based off aerial surveys.

	2000	2003	2005	2006	2007	2011	2013	2015
Long Meadow Lake Unit	39	20	31	66	40	37	43	29
Bloomington Ferry Unit	90	82	30	70	150	15	29	21

c) Upland Game

The harvest management of small upland game which includes huntable small mammals (squirrel, rabbit, and hare) and upland game birds (pheasant, grouse, gray partridge) is based on the understanding that small game species produce a large number of young each year, most of which are available for harvest because they would naturally not survive the winter and add to the next season's breeding population. Hunting these species is considered a form of compensatory mortality. It allows that a large portion of a species population could be harvested each fall because, if not taken by hunters, game species would likely die prior to the next breeding season from other causes. Compensatory mortality does not reduce subsequent spring breeding population size below what it would have been due to natural mortality. It follows that hunting mortality is compensated by a reduction in natural mortality. This concept of animal surplus relates especially well to r-selected species (i.e., small game animals having high potential for population increase with high annual mortality rates).

Data for small (upland) game is collected by MNDNR surveys. Annual population indices, 10-year averages, and historical information are used to determine statewide hunting seasons and bag limits for individual species. The 2015 August Roadside Survey found that population indices for the last few years are below the 10-year and long-term average (Dexter 2015). This trend was also similar in 2014. The MNDNR, however, has not proposed to modify hunting regulations for these species.

Wild turkey

Minnesota's wild turkey (*Meleagris gallopavo*) population has continued to expand since the first successful reintroduction in southeastern Minnesota in the 1960s. Turkey hunting is permitted in both the spring and fall; however hunting is closely regulated for continued population growth (Giudice et al. 2011). The 2006 statewide turkey population was estimated at 60,000 birds. The MNDNR's 2011 management goal is to establish and maintain the spring wild turkey population at or above 75,000 in suitable habitats to maximize hunting and viewing opportunities. This plan outlined actions for habitat management, hunting season management, population management, and information and education to ensure a successful program (MNDNR 2006). The 2010 Fall Wild Turkey Survey collected data from 13 Turkey Permit Areas in the state. The results showed an increase in the turkey population. The comparison of the distribution of turkeys sighted by deer hunters during fall 2010 suggests that the population is expanding specifically in northern and western Minnesota (Giudice et al. 2011). Although there are no formal population surveys for turkey in the Metropolitan Area near the Refuge, visitors and Refuge staff are observing increasing numbers of turkey on Refuge units.

Ring-necked pheasant

The ring-necked pheasant (*Phasianus colchicus*) competes with the ruffed grouse as the most popular upland game bird in Minnesota. Native in Asia, pheasants were introduced to Minnesota after the native prairie grouse declined in the late 1800s. According to a MNDNR plan, developed in cooperation with Pheasants Forever and other organizations, Minnesota is capable of sustaining high

densities of pheasants (MNDNR 2005). Using harvest as an indicator, Minnesota consistently ranks in the top 8 states that have huntable populations of wild ring-necked pheasants. Since 1987, statewide fall population estimates have varied from 1.0 to 2.3 million birds. The majority of the Refuge units open to pheasant hunting are in the MNDNR's Central Region. This region contains 5% of the state's grassland habitat with approximately 311,000 acres. The average number of pheasants observed (40.7/100 mi) in the 2015 survey rose 33% from 2013 and was 39% below the 10-year average (Dexter 2015). The increase in the pheasant abundance can be partially attributed to both the mild winter temperatures and lack of deep snow cover allowing for more available food sources. The heavy rainfall in May could have also contributed to renests, but drier conditions during the brood rearing season probably improved survival rates of chicks. (Dexter 2015).

Ruffed grouse

The ruffed grouse (*Bonasa umbellus*) is one of the most popular upland game birds in Minnesota along with the ring-necked pheasant. The number of drum heard per stop (dps) was used as the survey index value. The 2015 average ruffed grouse drums averaged 1.1 dps, which is a 1% decline from last year. This decline was probably due to the relatively little snow cover for snow roosting combined with a very cold and wet spring (Dexter 2015). Few ruffed grouse are found on Refuge lands because the Refuge is on the edge of ruffed grouse range in Minnesota (MNDNR 2015a).

Hungarian partridge

In 2015, the Hungarian partridge (*Perdix perdix*) index (2.3 /100 mi) was 150% higher than last year, 44% below the 10-year average and 83% below the long term average. Hungarian partridge are more strongly affected by weather conditions during nesting and brood rearing than pheasants, so reproductive success is limited outside of arid and dry years. Agricultural practices of converting to more intense, less diversified land use has also reduced the amount of suitable habitat (Dexter 2014). Hungarian partridge are uncommon on Refuge lands because the Refuge is on the edge of their range in Minnesota.

Cottontail rabbit and jackrabbit

Eastern cottontail rabbit (*Sylvilagus floridanus*) index (7.1 /100 mi) in 2015 was 36% higher than in 2014, and 34% below the 10-year average. White-tailed jackrabbit (*Lepus townsendii*) index (0.1 /100 mi) was similar to last year and the 10-year average. The historic lows reflect the loss of preferred habitat (Dexter 2015).

Gray, fox, eastern red squirrel

The MNDNR has no published estimates or trends for fox, eastern red, and gray squirrels; however, Refuge staff has observed that they are abundant in suitable Refuge habitat.

d) Furbearer Species

Monitoring the abundance of furbearers can be important for documenting the effects of harvest, habitat change, and environmental variability on these species' populations. Due to the nature of furbearers, estimating abundance over large areas using traditional methods such as distance sampling is often ineffective. MNDNR utilizes scent station survey routes to measure furbearer populations. The scent stations consist of sifted soil with a fatty-acid scent tablet placed in the middle. Stations were checked for presence or absence of tracks after a certain amount of time. Scent stations are used to document long-term trends in populations (Dexter 2015).

Coyote

Coyotes (*Canis latrans*) are the most abundant large predator in Minnesota. Based off the 2015 scent station data, coyote had a route visitation rate of 22%. The coyote index is well above its long-term average although it has declined in the past two years in the Farmland Zone, which includes a percent of the Refuge. Part of the Refuge is also in the Transition Zone, which shows that the coyote index is unchanged from last year, and is at peak levels above the long-term average (Dexter 2015). Refuge staff, visitors, and neighbors are reporting increased sightings of coyotes on Refuge lands.

Red fox

Red fox (*Vulpes vulpes*) are the most common predator in Minnesota. Red fox, in 2015, had visitation rates at 29%. In the Farmland Zone the red fox index is well below its long-term average. In the Transition Zone, red fox index had climbed to near long term averages, but have recently declined to well below its long-term average (Dexter 2015).

Gray fox

Gray fox (*Urocyon cinereoargenteus*) is a close cousin of the Red fox, inhabiting a more southern range in Minnesota, closely tied to the Eastern Broadleaf Forest Province. Gray fox is classified as a furbearer in Minnesota and has associated hunting and trapping seasons; only an estimated 600 were harvested in 2014-2015 season (Dexter 2015).

Raccoon

According to MNDNR, there are an estimated 800,000 to one million raccoons (*Procyon lotor*) in Minnesota (MNDNR, 2015b). In 2015, raccoon had a route visitation rate of 33%. The raccoon index has generally remained above-average in recent years in the Farmland Zone. The raccoon index for the Transition Zone has remained near the long-term average (Dexter 2015). Raccoons are routinely observed on Refuge lands.

Striped skunk

Based on the 2015 scent station data, striped skunk (*Mephitis mephitis*) had a route visitation rate of 33%. In the Farmland Zone and Transition Zone, which includes the Refuge, the 2015 data showed that skunk index is near its long-term average (Dexter 2015).

Virginia opossum

Virginia opossum (*Didelphis virginiana*) are common in the southern United States, however are expanding their range north as climates warm and populations are increasing in Minnesota. The MNDNR allows for hunting of opossum, however there are currently not estimates of their populations in the state or of the annual hunting harvest (Dexter 2015). Approximately 2,000 – 8,000 are trapped in Minnesota annually (Dexter 2015).

B. Is there competition for habitat between target species and other wildlife?

The Refuge has not conducted studies about direct habitat competition between species proposed to be hunted and other wildlife. White-tailed deer are the only ungulate found on the Refuge. Deer have a central role influencing the absolute and relative abundance of both woody and herbaceous plant species. High deer densities can hamper the regeneration of several valuable hardwood and understory plant species by overgrazing (Waller et al. 1997). Long term studies on deer and woody plant species, such as upland beech-maple (*Fagus-Acer*), have concluded that deer browsing was an important environmental factor in determining seedling longevity and mortality (Waller et al. 1997; Horsley et al. 2003). Low vegetation diversity can reduce other wildlife diversity that share habitat with white-tailed deer (Horsley et al. 2003). Competition between white-tailed and other wildlife is

only considered a limiting factor when there is a high deer population density. Refuge staff has observed the effects of white tailed deer on vegetation in several Refuge Units.

C. Are there unacceptable levels of predation by target species on other wildlife?

Predation levels of furbearers proposed to be hunted on other species have not been directly measured on the Refuge, but predation level by all predator species seem to be within acceptable levels. Coyotes have been known to prey on white-tailed deer, rodents, small predators, and occasionally, livestock such as sheep (MNDNR 2015b). Cascading species interactions have been studied in Minnesota, looking at the indirect effects of predation among predators. Coyotes also are known to prey on other furbearers such as raccoon and opossums. Coyotes can increase songbird and rodent abundance by suppressing small predator populations (Levi and Wilmers 2012). While coyote reportedly are increasing on the Refuge, they have not reached unacceptable population levels on most Refuge Units.

Red fox are opportunist predators that eat rodents, birds, snakes, fish, insects, berry nuts, and seeds. Gray fox (*Urocyon cinereoargenteus*) have a very similar diet to red fox with a preference for cottontail rabbits. Raccoons' diets consist of a variety of foods that include crayfish, frogs, insects, eggs, and sweet corn. Striped skunks prefer insects and their larvae, mice, eggs, and remains of dead animals. Opossum (*Didelphis virginiana*) are opportunistic omnivores that consume worms, snakes, insects, eggs, birds, fruit, grain, garbage, and remains of dead animals (MNDNR 2015b).

V. Description of Hunting Program

This plan proposes to open most Refuge-managed lands to recreational hunting by the general public. The hunting program generally will follow State of Minnesota regulations with respect to species, seasons, limits, and method of take. In specific instances, we propose to deviate from those regulations to meet Refuge wildlife population, public use, and public safety goals. This plan proposes that underserved Refuge user groups (e.g., physically challenged, youth) are provided with opportunities to hunt lands not open to the general public for the purpose of providing additional opportunities and increased quality of hunting experience. This plan also proposes to use members of the general public, with select skills, to participate in hunts, at specific times and specific locations, designed to manage the number of certain wildlife species (e.g., white-tailed deer).

A. Areas of the Refuge that Support Populations of the Target Species

The Refuge is a mixture of floodplain and upland eastern broadleaf forests, tallgrass prairie, and wetland habitat that support a diversity of wildlife species. More than 260 species of bird use the area during migration and about half of these species nest in the Minnesota River Watershed. Approximately 50 species of mammal and 30 species reptiles and amphibians are found in the Refuge. There are at least 10 game fish species found in the river and tributaries within and near the Refuge.

All units of the Refuge support populations of migratory birds, big game, upland game, and furbearers. All 13 Units of the Refuge are open to the public for some type of recreational use; portions of 11 Refuge Units are open to some type of hunting. Some Units have areas closed to hunting to reduce conflicts with other recreational, biological, or administrative uses.

B. Areas to be Opened to Hunting

Unit by Unit restrictions are based upon considerations of a specific unit's characteristics (e.g., size, shape), potential for conflict with other on-Unit or off-Unit uses or activities, local ordinances, and safety. Additional information regarding Refuge specific methods of take is provided in Section VII of this Chapter, "Conduct of the Hunt."

Select Refuge Units and areas will only be open hunting with a Special Use Permit (FWS Form 3-1383-G), which is needed for Population Management hunts and Refuge-specific special hunts (Figure 2).

Refuge-specific special hunts for hunters with disabilities, youth hunters, and other underserved hunting populations may be administered on designated areas of the Refuge that are closed to hunting by the general public. Additional information regarding Refuge-specific special hunts is provided in Section VII of this Chapter, "Conduct of the Hunt." All Units are open to Refuge-specific special hunts except the Round Lake Unit.

Hunting is allowed on designated areas of the Refuge as follows:

Round Lake Unit

Closed to all hunting including Refuge-specific special hunts.

Long Meadow Lake Unit (see map, Appendix A)

Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

- Open to population management hunting with a Special Use Permit.

Black Dog Unit

Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

- Open to population management hunting with a Special Use Permit.

Bloomington Ferry Unit (see map, Appendix A)

Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

- Open to population management hunting with a Special Use Permit.

Wilkie Unit (see map, Appendix A)

Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

- Migratory Birds closed to State spring season light goose hunting.
- Open to population management hunting with a Special Use Permit.

East of Eagle Creek (i.e., Continental Grain Marsh)

Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

West of Eagle Creek to Highway 169 (i.e., Rice Lake)

- Migratory Birds
 - Open only to hunting goose, duck, merganser, moorhen, coot, and rails.
 - Closed to hunting mourning dove, snipe, and woodcock.
- Upland Game
 - Closed to firearms hunting.
 - Closed to hunting crow.
 - Closed to firearms hunting for "furbearers."
- Big Game

- Closed to firearms hunting.

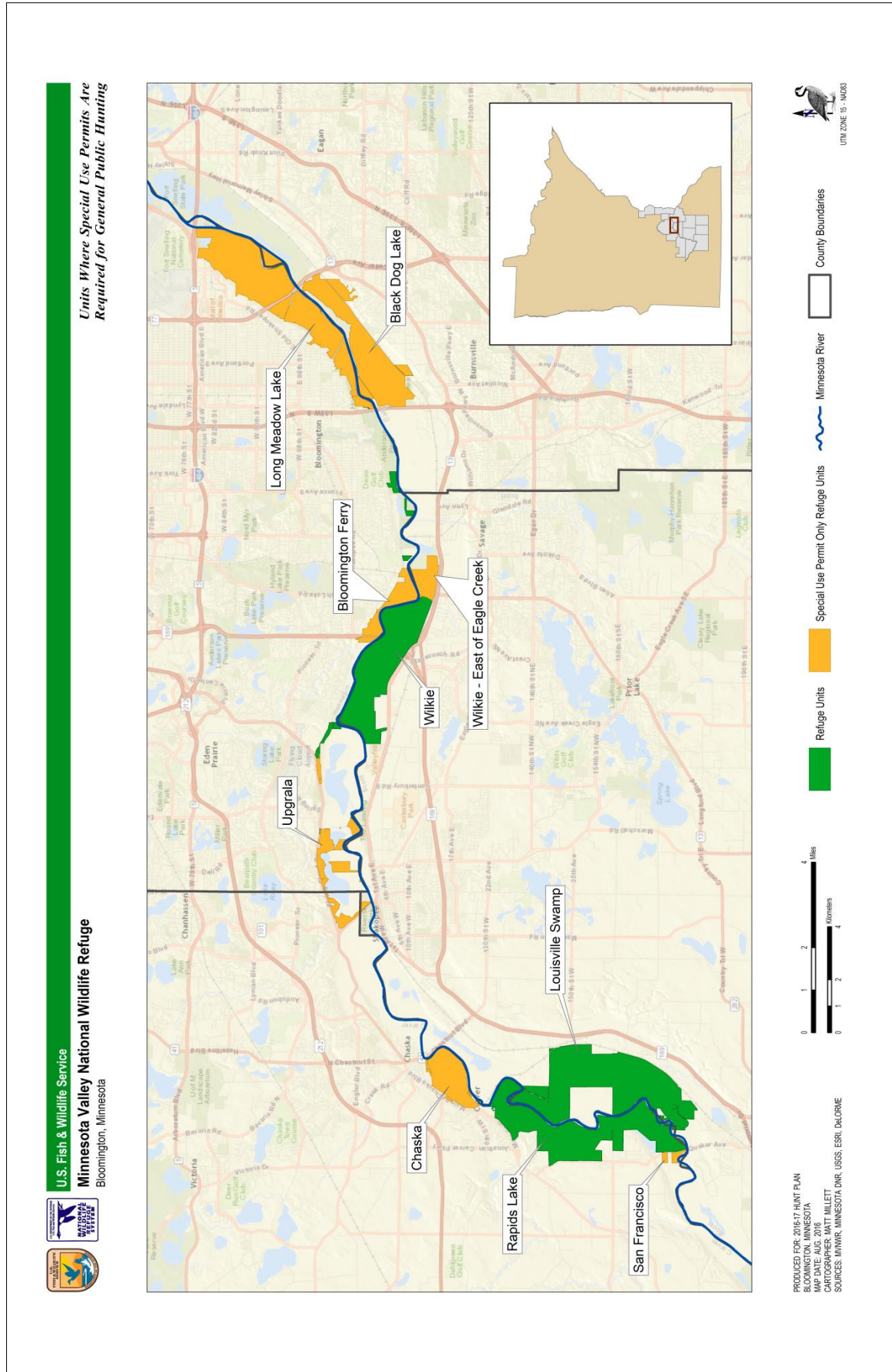


Figure 2: Refuge Units where general public hunts are only conducted with Special Use Permits

Wilkie Unit continued

West of Highway 169 (including Fisher and Blue Lakes)

- Migratory Birds
 - Open only to Refuge-specific hunts.
- Upland Game
 - Closed to firearms hunting.
 - Closed to hunting crow.
 - Closed to firearms hunting for “furbearers.”
- Big Game
 - Closed to firearms hunting.

Upgrala Unit (see map, Appendix A)

Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

- Open to population management hunting with a Special Use Permit.

Chaska Unit (see map, Appendix A)

Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

- Open to population management hunting with a Special Use Permit.

Louisville Swamp Unit (see map, Appendix A)

Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

- Open to population management hunting with a Special Use Permit.

North of Middle Road

- Migratory Birds
 - Open only to Refuge-specific hunts.
- Upland Game
 - Closed to firearms hunting.
 - Closed to hunting crow.
 - Closed to firearms hunting for “furbearers.”
- Big Game
 - Closed to firearms hunting.

South of Middle Road

- Migratory Birds
 - Open to hunting according to State regulations.
 - Closed to State spring season light goose hunting.
- Upland Game
 - Open to hunting according to State regulations.
 - Closed to hunting crow.
 - “Furbearers” open to hunting according to Refuge-specific regulations.
- Big Game
 - Open to hunting according to State regulations.

Rapids Lake Unit (see map, Appendix A)

Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

Open to population management hunting with a Special Use Permit.

- Migratory Birds
 - Open to hunting according to State regulations.
 - Closed to State spring season light goose hunting.
- Upland Game
 - Open to hunting according to State regulations.
 - Closed to hunting crow.
 - “Furbearers” open to hunting according to Refuge-specific regulations.
- Big Game
 - Open to hunting according to State regulations.

San Francisco Unit (see map, Appendix A)

Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

- Open to population management hunting with a Special Use Permit.

St. Lawrence Unit (see map, Appendix A)

Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

Open to population management hunting with a Special Use Permit.

- Migratory Birds
 - Open to hunting according to State regulations.
 - Closed to State spring season light goose hunting.
- Upland Game
 - Open to hunting according to State regulations.
 - Closed to hunting crow.
 - Closed to firearms hunting for “furbearers.”
- Big Game
 - Closed to firearms hunting.

Jessenland Unit (see map, Appendix A)

Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

Open to population management hunting with a Special Use Permit.

- Migratory Birds
 - Open to hunting according to State regulations.
 - Closed to State spring season light goose hunting.
- Upland Game
 - Open to hunting according to State regulations.
 - Open to crow hunting according to Refuge-specific regulations.
 - “Furbearers” open to hunting according to Refuge-specific regulations.
- Big Game
 - Open to hunting according to State regulations.

Blakeley Unit (see map, Appendix A)

Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

Open to population management hunting with a Special Use Permit.

- Migratory Birds
 - Open to hunting according to State regulations.
 - Closed to State spring season light goose hunting.
- Upland Game
 - Open to hunting according to State regulations.

- Open to crow hunting according to Refuge-specific regulations.
- “Furbearers” open to hunting according to Refuge-specific regulations.
- Big Game
 - Open to hunting according to State regulations.

C. Species to be Taken, Hunting Periods, Hunting Access

Generally, the Refuge is open to hunting according to State seasons, with a few exceptions. The Refuge has limited hunting for some species and restricted the method of take for some species groups on a unit by unit basis. A list of species open to hunting on the Refuge can be found in Table 3.

a) Species to be Taken

The Refuge is closed to hunting for species not listed as open. Species not open to hunting on the Refuge include swans, sandhill cranes, badgers, ground squirrels, and all other species not listed as open, including species designated as unprotected by state regulations.

Table 3: Species proposed to be open to hunting on the Refuge in 2017 and beyond.

Migratory Game Birds	Upland Game	Big Game
-Waterfowl (i.e., goose, duck, and merganser)	-Ruffed grouse	-White-tailed deer
-Moorhen/gallinule	-Hungarian partridge	
-Coot	-Ring-necked pheasant	
-Rail (Virginia and Sora)	-American crow	
-American Woodcock	-Wild turkey	
-Common snipe	-Snowshoe hare	
-Mourning dove	-Cottontail rabbit	
	-Jackrabbit	
	-Squirrel (fox, eastern red, and gray)	
	-Coyote	
	-Fox (red and gray)	
	-Raccoon	
	-Opossum	
	-Striped skunk	

b) Hunting Periods

For certain species, the Refuge has different hunting seasons from the State seasons in order to minimize conflicts with other Refuge wildlife-dependent activities (see Table 4). The Refuge also has restricted the method of take for some species groups on a unit by unit basis. Such unit by unit restrictions are based upon considerations of a specific unit’s characteristics (e.g., size, shape,) potential for conflict with other on-unit or off-unit uses or activities, local ordinances, and safety (see part B of Section V).

Table 4: Refuge hunting seasons that differ from State seasons.

Species	Refuge Season
American crow	State fall crow season only

Coyote	September 1 st thru February 28 th
Fox (red and gray)	Beginning of State season thru February 28 th
Raccoon	Beginning of State season thru February 28 th
Opossum	Beginning of State season thru February 28 th
Striped skunk	September 1 st thru February 28 th

c) Hunting Access

There are no special entry or access procedures for hunters using the Refuge. The general hunting public can enter the Refuge either through official trailheads and parking areas or from the Minnesota River. Hunters can access areas open to hunting by traversing through Refuge areas that are closed to hunting, however guns and bows must be unloaded and cased when traversing the closed areas. Hunters can also access Refuge lands from adjacent state or city trails, private lands, and state, county, and city lands, provided hunters comply with local ordinances or regulations specific to such areas. Trailheads or parking areas are located in the following areas:

Wilkie Unit (Appendix A)

Bloomington Ferry Circle (via Bloomington Ferry Unit)
 Highway 101 (Old Hwy 18)
 Rice Lake Boat Launch (seasonal via Old Hwy 18)
 Blue Lake Trailhead

Louisville Swamp Unit (Appendix A)

North Access (145th St.)
 Middle Road (Bluff Drive/Jordan Avenue)
 Hunter Parking Lot (173rd Street/Valley View Drive)
 Duck Lane

Rapids Lake Unit (Appendix A)

Carver-Highlands Drive
 Jonathan Carver Parkway/ County Road 11 North Lot
 Jonathan Carver Parkway/ County Road 11 South Lot
 Carver Bluffs Parkway/County Road 40

St. Lawrence Unit (Appendix A)

U.S. Highway 169

Jessenland Unit (Appendix A)

County Road 6 (Two designated areas)

Blakeley Unit (Appendix A)

Minnesota Highway 19

Persons participating in Refuge- specific special hunts or population management hunts will be required to notify the Refuge Manager when they participate in such hunts. Access for population management hunts will be identified at the time of the specific hunt event.

D. Justification for the Permit

In general, no special permit or application is needed to participate in general public hunts on the Refuge.

For population management hunts and for Refuge-specific special hunts, we will require hunters to obtain a Special Use Permit (FWS Form 3-1383-G) either as individuals or as part of an organization whose purpose is to facilitate participation by underserved groups.

Population management hunts are for the purpose of reducing the numbers of over abundant or nuisance species (e.g., white-tailed deer) (Figure 2). Because of the intense development surrounding these units, a Special Use Permit is needed to manage hunting activity to minimize public concerns. Anyone in the general public may apply to participate in a population management hunt, but applicants must pass an archery proficiency test and have a MnDNR bowhunter certification in order to participate in the hunt (see part C of Section VII). The Refuge will be working in collaboration with other organizations to assist in administering proficiency tests in order to have qualified, competent, and responsible participants for these population management hunts. The Refuge will specify the number of animals to be removed, the number of hunters allowed on each Refuge Unit, and when the hunt will be conducted. This will enable the Refuge to better manage safety and other potential concerns of Refuge users and adjacent landowners.

Refuge-specific special hunts are designed to increase participation of underserved hunter groups such as youth and individuals with disabilities. Members of the general public who meet the definition of underserved populations (e.g., physically challenged, youth), are allowed to seek a Special Use Permit to partake in hunts designed to increase their participation in the Refuge hunting program.

E. Consultation and Coordination with the State

The Refuge's hunting program has been developed in coordination with MNDNR regional and area managers. This coordination was accomplished through formal and informal meetings as well as Refuge solicitation of MNDNR comments on written Hunt Plan and supporting documents. The Refuge's consultation with MNDNR regional and area managers for the development of the Hunting Chapter dates back to 1999 as the Refuge began a series of meetings to develop a vision for Refuge programs via the CCP process. Formal consultations specific to the Refuge's hunting programs continued through 2005, then again in 2009, 2010, 2011, and 2012. The Refuge continues to coordinate with MNDNR, as well as resource managers from local units of government, regarding the Refuge hunting program. The Refuge has moved forward with developing this Hunting Plan based upon earlier formal coordination with the MNDNR, subsequent informal discussions, and formal comments received during our 2009, 2010, 2011, and 2012 revision processes. The results of this coordination are reflected in this Plan revision. In addition, State of Minnesota wildlife and land managers reviewed and commented on this hunting plan and its supporting documents.

The Refuge's Louisville Swamp Unit completely encompasses the MNDNR's Carver Rapids Unit of the Minnesota Valley State Recreation Area. The boundary between the Refuge and the State Recreation Area is posted. Hunting regulations applicable to the Carver Rapids Unit are set by the State of Minnesota.

Following the adoption of this Hunt Plan, consultation and coordination with the MNDNR and others regarding its annual implementation will be a combination of formal and informal activities based upon the nature of the issues to be addressed.

F. Law Enforcement

A hunting brochure that identifies Refuge-specific regulations is printed annually. This brochure is available at Refuge Visitor Centers, the Refuge's website, and parking lots of Units open to hunting. Refuge-specific hunting regulations also are posted at parking lots of those Units.

The enforcement of Refuge and State hunting regulations, trespassing and other public use violations normally associated with management of a National Wildlife Refuge is the responsibility of commissioned Refuge Law Enforcement Officers. Refuge Officers cooperate with, and are assisted by, state, county and city police officers as well as state conservation officers. The procedures used for obtaining law enforcement assistance are based on the legal jurisdiction where incidents occur. The Refuge regularly meets with the various state, city and county law enforcement agencies to develop agreements and strategies to ensure law enforcement operations are performed as safely and efficiently as possible.

The Refuge also uses non-law enforcement staff to manage hunting activities. For example, some staff works on alternate schedules so they are on the Refuge Units on weekends during the hunting season. These staff assists hunters and non-hunters to ensure that all Refuge users understand where to locate areas that are open to hunting. Other Refuge staff and volunteers assist with special hunts for youth, hunters with disabilities, and other underserved hunting populations. Refuge Visitor Services staff operate the Refuge's education and visitor centers routinely interact with and assist Refuge users during the hunting season.

G. Funding and Staffing Requirements

The annual cost of Refuge activities to attain the Hunting Program objective is an estimated \$102,103 out of an overall Refuge annual operating budget of about \$2,600,000. This cost includes staff (181 days, \$55,692) and operating expenses (\$46,410) for Refuge law enforcement and hunter assistance during the hunting season. This estimate also includes Refuge staff activities associated with evaluating resources available for hunting (e.g., biological assessments of target species) as well as preparing for (e.g., special signage and access) and monitoring hunting activities.

The Refuge continues to add to its land base. Any increases in annual costs will depend on the number of acres added to the Refuge and the consistency of hunting regulations, availability of volunteers, and donated funds. Expenses include boundary posting, other signage, parking lot construction, gate installation, brochures, and other hunting specific activities. An increase in law enforcement patrols including vehicle costs and overtime also might be necessary. These additional costs, estimated at \$15,600, would be accrued if officers from other sources are needed to assist with an expanding hunting program.

VI. Measures Taken to Avoid Conflicts with Other Management Objectives

A. Biological Conflicts

The Refuge avoids hunting conflicts with biological resources by adopting the “wildlife first” principle explicitly stated in the Improvement Act. Staff monitors species population trends to ensure that target species can be hunted at the Refuge without adversely affecting the species. These monitoring activities include direct observation of populations, consultation with State and Service species specialists, and review of current species survey information and research. In addition, the Refuge limits or excludes hunting activities on portions of Refuge Units where there are biological concerns. Certain areas of the Refuge are not hunted specifically to provide areas of sanctuary. For example, the Fisher Lake portion of the Wilkie Unit serves as a sanctuary for migratory birds in an area otherwise hunted heavily for migratory birds.

State hunting seasons for some upland game species extend into the spring migration period. For these species, hunting on the Refuge ends February 28 to ensure that disturbance to migrating and breeding birds is minimized.

Spring turkey hunting has the most potential for conflicting with biological resources. A large colonial bird rookery is located on the Wilkie Unit. A one-half mile buffer around this rookery is closed to public use during the nesting season to minimize potential disturbance. This eliminates spring turkey hunting in the immediate vicinity of these vital nesting areas. Due to the dispersed and stealthy nature of turkey hunting, it presents minimal conflicts with other wildlife in the spring.

B. Public Use Conflicts

In an effort to avoid conflicts with priority non-hunting recreational uses outlined in the Improvement Act, and for safety, the Refuge enforces a series of Refuge-specific hunting regulations. Hunting is either not allowed on certain Units or is restricted by location or methods. On units that do support hunting, hunters may be restricted to specific types of hunts or hunting locations. On all Refuge Units, hunting is not allowed on, across, or within 100 feet of any service road, parking lot, or designated trail.

The boundaries of all lands owned or managed by the Service are posted with Refuge boundary signs. Areas administratively closed to hunting are clearly marked with “No Hunting Zone” or “Area Beyond This Sign Closed” signs.

Overall, impacts to visitor services/recreation opportunities are considered short-term, minor and local since other parts of the Refuge are available for use by non-hunters (other wildlife-dependent recreation users).

C. Administrative Conflicts

The most potential for conflict with management activities occurs during the spring and fall prescribed fire season. Occasionally, an area open to hunting is proposed to receive a prescribed fire treatment. Typically, a notice of the impending treatment is posted at the unit public access points to alert all users, including hunters. Prior to implementing the fire treatment, the treatment unit is scouted by Refuge fire staff to ensure that no one is endangered by the treatment.

VII. Conduct of the Hunting Program

Where hunting on the Refuge is allowed, it follows the season dates and bag limits in the State regulations, with a few exceptions (Table 2). Other state regulations incorporated into the Refuge

hunting program include all methods of take legal in Minnesota (i.e., firearms, archery, falconry), all hunting weapons and ammunition restrictions (e.g., caliber and loads), and all state-regulated special seasons (e.g., early goose, youth deer, youth turkey, youth waterfowl, metropolitan zone seasons and limits) unless otherwise restricted by Refuge-specific regulation.

All hunting activity is subject to Refuge-specific regulations (as noted below) in addition to State regulations. When Refuge-specific regulations and State regulations differ, the Refuge-specific regulations apply. These regulations may be modified as conditions change or if refuge expansion continues.

State hunting regulations applicable to the Refuge, such as seasons, bag limits, and general methods of take are published annually in the Minnesota Hunting and Trapping Regulations Handbook. In addition, a synopsis of Refuge-specific regulations is made available to the public in the Refuge's hunting brochure. Copies of the hunting brochure are available at the Refuge's Visitor Centers, unit entrance kiosks, and on the Refuge internet website.

A. Refuge-Specific Migratory Game Bird, Big Game, Upland Game, and Furbearer Hunting Regulations

Information on archery, rifle, and waterfowl hunts is listed below and can be downloaded in brochure form from the Refuge website: http://www.fws.gov/refuge/minnesota_valley/

Regulations Pertaining to all National Wildlife Refuge System Lands

Regulations pertaining to public use, including hunting, on all National Wildlife Refuges are found throughout 50 Code of Federal Regulations (CFR). The regulations, as they are published in the CFR, are the official notification to the public. Regulations specific to hunting on all National Wildlife Refuges are found in 50 CFR 32.2. They state:

§ 32.2 What are the requirements for hunting on areas of the National Wildlife Refuge System? The following provisions shall apply to each person while engaged in public hunting on areas of the National Wildlife Refuge System:

- (a) Each person shall secure and possess the required State license.
- (b) Each person 16 years of age and older shall secure and possess a Migratory Bird Hunting Stamp while hunting migratory waterfowl.
- (c) Each person shall comply with the applicable provisions of Federal law and regulations including this subchapter and the current Federal Migratory Bird Regulations.
- (d) Each person shall comply with the applicable provisions of the laws and regulations of the State wherein any area is located unless further restricted by Federal law or regulation.
- (e) Each person shall comply with the terms and conditions authorizing access or use of wildlife refuges, including the terms and conditions under which hunting permits are issued.
- (f) Each person must comply with the provisions of any refuge-specific regulations governing hunting on the wildlife refuge area. Regulations, special conditions, and maps of the hunting areas for a particular wildlife refuge are available at that area's headquarters. In addition, refuge-specific hunting regulations for migratory game bird, upland game, and big game hunting appear in §§32.20 through 32.72.
- (g) The use of any drug on any arrow for bow hunting on national wildlife refuges is prohibited. Archers may not have arrows employing such drugs in their possession on any national wildlife refuge.
- (h) The unauthorized distribution of bait and the hunting over bait is prohibited on wildlife

refuge areas. (Baiting is authorized in accordance with State regulations on national wildlife refuges in Alaska).

(i) The use of nails, wire, screws or bolts to attach a stand to a tree, or hunting from a tree into which a metal object has been driven to support a hunter is prohibited on wildlife refuge areas.

(j) The use or possession of alcoholic beverages while hunting is prohibited.

(k) You may possess only approved nontoxic shot while in the field, which we identify in 50 CFR 20.21(j), while on Waterfowl Production Areas, or on certain other areas of the National Wildlife Refuge System as delineated on maps, leaflets and/or signs, available at each refuge headquarters or posted at each refuge, or as stated in refuge-specific regulations. Where we allow turkey and deer hunting, you may use slugs and shot containing lead to hunt these species unless prohibited by refuge-specific regulations and State law.

Other regulations related to activities typically associated with hunting and found elsewhere in 50 CFR follow (in plain language). These regulations apply to all National Wildlife Refuges.

- Public access, including hunting, is prohibited in administratively closed areas (50 CFR 26.21).
- Public access, including hunting, is allowed only in designated areas (50 CFR 26.21).
- No motorized vehicles are allowed within the hunting units except at designated parking areas or by Special Use Permit (50 CFR 27.31).
- Target shooting is prohibited (50 CFR 27.42, 27.43).

Minnesota Valley National Wildlife Refuge-Specific Regulations

Hunting regulations specific to the Minnesota Valley National Wildlife Refuge are found at 50 CFR 32.42. The “plain language” version of these regulations, as used in our public outreach as follows:

- We allow the hunting of only Refuge-specified species on designated areas of the refuge in accordance with State regulations subject to Refuge-specific conditions.
- Hunting is prohibited on, across or within 100 feet of any service road, parking lot or trail.
- For authorized hunting activities, the Refuge is open two hours before legal shooting time to one hour after legal shooting time. Camping is prohibited.
- Archery, firearms, and falconry are allowed for hunting on designated areas of the Refuge.
- Non-toxic shot must be used to hunt migratory birds and upland game including turkey. Hunters using shotguns for migratory birds and upland game may possess only approved nontoxic shot while in the field.
- We encourage hunters to voluntarily use non-toxic projectiles while hunting any species on the Refuge. However, Shotgun slugs and muzzleloader ammunition containing lead may be used when hunting big game (white-tailed deer) and furbearers.
- In designated areas, single projectile ammunition is prohibited for hunting.
- The use of centerfire rifles or air guns for hunting is prohibited on the Refuge.
- Refuge authorization is required for all Refuge-specific special hunts or Refuge-specific population management hunts.
- Gas or electric boat motors are prohibited on the Refuge. Non-motorized watercrafts are allowed in designated areas for waterfowl hunting.
- All personal property, including, but not limited to, boats, blinds, and stands, must be removed at the end of each day.
- We allow the use of hunting dogs during the State-approved hunting season, provided the dog is under the immediate control of the hunter at all times. We do not allow the use of dogs for furbearer hunting.

- No motorized vehicles are allowed within the hunting units except at designated parking areas or by Special Use Permit.

Where the Refuge is open for firearms deer hunting, single projectile ammunition is allowed for this purpose. This includes the following Units: Louisville Swamp (south of Middle Road), Rapids Lake, Jessenland, and Blakeley. Due to the short duration and well publicized nature of deer firearms season, combined with the closure trails and other high-use areas to all hunting activities, the use of single projectile ammunition for deer hunting will not cause safety issues or conflicts with other refuge uses.

For upland game hunting, .22 cal., and smaller, rimfire single projectile ammunition is allowed on the Jessenland and Blakeley Units. Single projectile ammunition for upland game hunting is prohibited on other, more urban Units for safety reasons due to the character of the Units and the high potential for conflicts with on-Unit and off-Unit activities. The Units where single projectile ammunition for upland game hunting is prohibited are Round Lake, Long Meadow Lake, Black Dog, Bloomington Ferry, Wilkie, Upgrala, Chaska, Louisville Swamp, Rapids Lake, and St. Lawrence.

For furbearer hunting, Refuge regulations are the same that apply to upland game species. Jessenland and Blakeley Units allow .22 cal., and smaller, rimfire single projectile ammunition for hunting furbearers. The Units where single projectile ammunition for furbearer hunting is prohibited are Round Lake, Long Meadow Lake, Black Dog, Bloomington Ferry, Wilkie, Upgrala, Chaska, Louisville Swamp, Rapids Lake, and St. Lawrence. Furbearer hunting hours are restricted to daytime hours, same as upland game. No hunting dogs are allowed for furbearer hunting because dogs used in this type of hunting are typically not under the immediate control of the hunter.

Only non-toxic shot may be used or possessed where hunting migratory bird and upland game, including turkey, with a shotgun is allowed. Hunters using single-projectile ammunition are encouraged to use non-toxic projectiles.

Falconry is allowed on all Refuge Units that are open to general public hunting according to State regulations.

A general synopsis of regulations relating to hunting on the Refuge, as well as all other National Wildlife Refuges in Minnesota, is published in the Minnesota Hunting and Trapping Regulations Handbook. Annual updates to Refuge regulations are provided to the MNDNR for publication.

B. Anticipated Public Reaction to the Hunting Program

Public reaction to hunting activities on Refuge lands varies. Overall, a hunting program at the Refuge is supported by the public. Concerns related to hunting as identified in our CCP process and subsequent user contacts relate to maintaining hunting opportunities, wildlife population control, potential user group conflicts and public safety. Efforts have been made to address user concerns by focusing hunting opportunities to specific portions of units and specific methods of take within the framework of state seasons and limits.

C. Hunter Application and Registration Procedures

For general public hunting activities, no special application or registration process is required on Wilkie, St. Lawrence, Louisville Swamp, Rapid Lake, Jessenland, and Blakely Units. A Refuge Special Use Permit (FWS Form 3-1383-G) is needed to participate population management hunts on any Refuge Units. The Refuge Special Use Permit also is needed to participate in Refuge-specific special hunts to help provide additional quality hunt opportunities for underserved hunting populations. Should the Refuge implement other application or registration procedures, it will use the Office of Management and Budget approved forms.

a) Refuge-Specific Special Hunts

Certain Refuge units, or parts of units, as indicated in Section V of this Chapter, “Description of Hunting Program,” are open only to Refuge-specific special hunts. A Refuge-specific special hunt is a Refuge-specific activity focused on certain populations of hunters to provide them with additional opportunities or methods of hunting through a Refuge sponsored program or agreement. The populations targeted for these hunts are youth hunters and hunters with disabilities or other underserved hunter populations. The goal of Refuge-specific special hunts is to provide quality recreational hunting experiences that may be limited or not available for these underserved hunting populations within the structure of general public hunting.

Refuge partners coordinating Refuge-specific special hunts require application and registration processes to ensure eligibility requirements are met. All Refuge-specific special hunts are conducted within the framework of the State seasons and regulations for the species proposed to be hunted. In administering these special hunts, the Refuge Manager considers the biological effect of proposed hunting activities as well as the special hunt’s potential to conflict with non-hunting recreational activities. Individuals or groups wishing to participate in a Refuge-specific special hunt must first obtain Refuge-specific authorization that identifies the species to be hunted, the location of the hunt, and other requirements the Refuge Manager deems necessary to address potential biological, public use, or administrative conflicts.

For the purposes of this plan, statewide Youth Hunting activities occurring on Refuge lands open to general public hunting are not “Refuge-Specific Special Hunts” as designated in this chapter. Refuge areas open to hunting without Refuge-specific regulations also are open to statewide Youth Hunting activities.

Refuge Youth Waterfowl Hunts

A Young Waterfowlers Program is held at the Refuge. This program is sponsored by the Refuge, in partnership with the Minnesota Waterfowl Association, MNDNR, and Minnesota Duck & Goose Callers. Youth hunters, ages 12 to 15, learn about waterfowl identification and habitat, ethics, rules and regulations, firearm ballistics and waterfowl hunting techniques from experts. Program participants have the opportunity to hunt with experienced mentors on the Refuge. Applications are not required by the Refuge for Young Waterfowlers Program participation. To date, the program has been able to accommodate all interested youth so there is no special selection process.

The program itself includes 12 hours of coursework and six hours of field experience. On the day of the State-regulated Youth Waterfowl Hunt, program participants hunt areas of the Refuge generally closed to other waterfowl hunters. These areas may include the Long Meadow Lake, Black Dog, Bloomington Ferry, and Chaska Units, and parts of Wilkie, Upgrala, and Louisville Swamp Units depending on resource conditions. Throughout the remainder of the Minnesota State waterfowl season, specific areas of the Refuge are open only to Young Waterfowlers. For participants in the Young Waterfowlers program, the Refuge assigns hunting sites based upon number of parties, biological considerations, and habitat conditions. Typically, Refuge areas reserved for Young

Waterfowlers support between two and four parties per hunting day. These areas are reserved to help program participants continue developing the skills learned through the program. Adult mentors are not allowed to hunt at any time during the season while accompanying a young waterfowler.

The Rapids Lake, St. Lawrence, Jessenland, and Blakeley Units, as well as parts of the Wilkie and Louisville Swamp Units are open to migratory bird hunting according to state regulation. Because of this, these Units are open to all youth hunters regardless of participation in the Refuge's Young Waterfowlers Program during the State-regulated Youth Waterfowl Hunt.

Refuge Youth Turkey Hunt

A Youth Turkey Hunt Program is available at the Refuge. This program is designed to provide hunting opportunities to metro area youth. Adult mentors from this program accompany program participants to assigned hunting locations on designated Refuge Units. In past years, this program was cooperatively sponsored by the Refuge, Outdoor Heritage Alliance, and the MNDNR. The National Wild Turkey Federation began partnering with the Refuge in 2014. Applications are not required by the Refuge for Youth Turkey Hunt Program participation.

Refuge Accessible Hunts

The Refuge accommodates physically challenged hunters. A hunter participating in a Refuge-specific special hunt for physically challenged persons must have a verified statement of the disability by a licensed physician or must be participating in a program for physically challenged hunters sponsored by a nonprofit organization. Physically challenged hunters possessing a MNDNR issued permit exempting them from particular state regulations based upon their disability will be eligible to apply for Refuge-specific authorization to participate in accessible hunting opportunities on the Refuge.

Since 1998 the Refuge has joined with Capable Partners (CP) to offer waterfowl, turkey, and deer hunting for persons with disabilities. CP is a private organization in St. Paul, Minnesota, that has a mission to provide fishing and hunting outings for sportsmen and sportswomen with disabilities. The Refuge issues a Special Use Permit (SUP) annually to CP that enables them to coordinate the program. An average of 12 physically challenged hunters, and their assistants, hunt 12-15 days during each waterfowl season. A dedicated waterfowl hunting area consists of an access road, an accessible trail, and may include other structural facilities such as accessible blinds. CP hunters are also allowed vehicle access to specific sites on selected Refuge units for waterfowl, turkey, and deer hunting. The specific sites are identified on a case-by-case basis to ensure they meet the needs of the hunter and other biological, public use, or administrative considerations. Hunters participating in the CP coordinated hunts must meet certain physical requirements but do not need to be members of CP.

b) Population Management Hunts on Specific Units

Population management hunts are for the purpose of reducing the numbers of over abundant or nuisance species (e.g., white-tailed deer). These hunts are to occur on specific portions of specific Refuge Units. Population management hunts are not expected to occur on every Refuge Units each year and the frequency of the hunts will fluctuate year to year based on the most current species population data. Frequency of hunts on a Refuge Unit will decrease over time as population density of target species are closer to goal levels.

Population management hunts are short duration in nature, generally lasting 2 to 10 days. Typically they are sited on Units surrounded by intense development where hunting normally is not allowed.

Because of the intense development surrounding these units, only archery hunting by skilled members of the general public will be allowed. Such hunts have been successfully implemented in the Minneapolis-St. Paul metropolitan area for more than 20 years by several units of local government (MBRB 2015). We anticipate these population management hunts will be conducted primarily on the on the Long Meadow Lake, Black Dog, Bloomington Ferry, Upgrala, and Chaska Units (Figure 2). These Units historically serve as sanctuaries for white-tailed deer with resulting damage to habitat on and off-Refuge and an increased incidence of deer-car collisions on surrounding streets and highways.

A Refuge Special Use Permit (FWS Form 3-1383-G) is required to participate in population management hunts. Anyone in the general public may apply to be considered for a Special Use Permit, but applicants must pass a proficiency test and have taken a bowhunter certification class in order to participant in the hunt. The Refuge will be working in collaboration with other organizations to assist in administering proficiency tests in order to have qualified, competent, and responsible participates for hunting on these Refuge Units. The Refuge will specify the number of animals to be removed, the number of hunters allowed on each Refuge Unit, and when the hunt will be conducted. This will enable the Refuge to better manage safety and other potential concerns of Refuge users and adjacent landowners.

The level of proficiency test required to hunt in these Units is designated on a case-by-case basis. Restrictions are based upon considerations of a specific unit's or area's characteristics (e.g., size, shape,) potential for conflict with other on-unit or off-unit uses or activities, local ordinances, and safety. For all locations in these Units, hunters have to pass, at minimum, a "standard" proficiency test. This level of proficiency requires a prospective hunter being able to shoot 5 of 5 arrows in a 7" circle at 20 yards. Most areas will likely require prospective hunters to pass a "sharpshooter" proficiency test that requires being able to shoot 5 of 5 arrows in a 4" circle at 20 yards. In select situations, a prospective bowhunter may be required to demonstrate proficiency under simulated field conditions (e.g., full hunting gear, elevated stand).

D. Description of Hunter Selection Process

The Refuge does not have a hunter selection process for open general public hunting. Wilkie, Louisville Swamp, Rapid Lake, St. Lawrence, Jessenland, and Blakely Units are open to hunters who are eligible to hunt under Minnesota law.

Special Refuge permits are required for population management hunts (e.g., archery hunting for white-tailed deer) on select Refuge Units (except on Long Meadow Lake, Black Dog, Bloomington Ferry, Upgrala, and Chaska Units). The Refuge will be collaborating with local organizations to recruit skilled hunters for population management hunts. The selection process will be a type of lottery system due to the limited number of permits will be available. Other requirements for being considered for a special Refuge permit are described above in the Hunter Application and Registration Procedures section.

E. Media Selection for Announcing and Publicizing the Hunting Program

Information regarding Refuge hunting opportunities is posted on the Refuge's website, at both visitor centers, and in kiosks at Refuge Unit parking lots. Hunter information brochure dispensers are located at Unit trailheads open to hunting. Reminders of upcoming hunting seasons and instructions where to find additional information are placed on the Refuge website and Facebook

page. Special announcements and articles may be released in conjunction with hunting seasons via news releases and social media.

F. General Requirements

General information regarding hunting and the other wildlife-dependent public uses can be obtained at Minnesota Valley National Wildlife Refuge headquarters at 3815 American Boulevard East, Bloomington, Minnesota 55425 or by calling 952.854.5900. Dates, forms, hunting unit directions, maps, applications, and permit requirements about the hunt will be available at the Refuge Visitor Center or the Refuge's website at: http://www.fws.gov/refuge/minnesota_valley/

G. Hunter Requirements

Hunters who are eligible to hunt under Minnesota law are allowed to hunt on the Refuge. The Refuge does not impose any special requirements on those wishing to hunt on the Refuge, except for hunters participating in Refuge-specific special hunts or wishing to participate in a population management hunt. Eligibility and other requirements for participating in Refuge-specific special hunts are described above in the Hunter Application and Registration Procedures section. Information pertaining to participating in a population management hunt on select Refuge Units is described above in the Hunter Application and Registration Procedures section.

The Refuge does not routinely require hunters to report on hunting activities or harvest separately from that already required by the state of Minnesota. Minnesota reporting requirements include the Migratory Bird Harvest Information Program (HIP), and turkey and deer registration. Hunters receiving a Special Use Permit to participants in a Refuge special hunt or population management hunt will be required to report on their activities as part of the SUP special conditions. Should an additional Refuge-specific reporting program be implemented, the Refuge will use the appropriate form approved by the Office of Management and Budget.

VIII. Compatibility Determination

Hunting and all associated program activities proposed in this plan are compatible with purposes of the refuge. A Compatibility Determination for this plan was completed October 2, 2014.

REFERENCES

- Cooper, T.R., and R.D. Rau. 2015. American woodcock population status. 2015. U.S. Fish and Wildlife Service, Laurel, MD. 16 pp.
- Dexter, M.H., editor. 2015. Status of wildlife populations, fall 2013. Unpub. Rep., Division of Fish and Wildlife, Minn. Dept. Nat. Res., St. Paul, Minnesota. 338 pp.
- Fisher, I.J, D.J. Pain, V.G. Thomas. 2006. A review of lead poisoning from ammunition sources in terrestrial birds, *Biological Conservation*. 131(3). 421-432pp.
- Giudice, J.M. Tranel, and K. Haroldson. 2011. Fall Wild Turkey Population Survey, 2010. Minnesota Department of Natural Resources, St. Paul, MN, Agency Report.
- Horsley, S. B., S.L. Stout., D.S. DeCalesta., 2003. White tailed deer impact on the vegetation dynamics of a northern hardwood forest. *Ecological Applications*. 13(1). 98-118pp.
- Hunt, W.G., W. Burnham, C.N. Parish, K.K. Burnham, B. Mutch, J.L. Oaks. 2006. Bullet fragments in deer remains: Implications for lead exposure. *Wildlife Society Bulletin*. 34(1). 167-170 pp.
- Kelly, T.R., P.H. Bloom, S.G. Torres, Y.Z. Hernandez, R.H. Poppenga, W.M. Boyce, C.K. Johnson. 2011. Impact of the California lead ammunition ban on reducing lead exposure in golden eagles and turkey vultures. *PLOS ONE*. 6(4). 1-8pp.
- Kramer, J.L. , P.T. Redig. 1997. Sixteen of lead poisoning in eagles, 1980-95: An epizootiologic view. *Journal of Raptor Research*. 31(4). 327-332 pp.
- Levi, T., and C.C. Wilmers. 2012. Wolves-coyotes-foxes: a cascade among carnivores. *Ecology*. 93 (4). 921-929pp.
- Metro Bowhunter Resource Base. 2014. What is MBRB?. <http://mbrb.org/mbrb/mbrb-p04.htm>
- Minnesota Department of Natural Resources. 2005. Long range plan for the ring-necked pheasant in Minnesota. Division of Wildlife, Minnesota Department of Natural Resources, St. Paul, Minnesota. 24 pp.
- Minnesota Department of Natural Resources. 2006. Long range plan for the wild turkey in Minnesota. Minnesota Department of Natural Resources, St. Paul, Minnesota. Interagency Report. 36 pp.
- Minnesota Department of Natural Resources. 2015a. Grouse Hunting. Division of Wildlife, Minnesota Department of Natural Resources, St. Paul, Minnesota. <http://dnr.state.mn.us/hunting/grouse/index.html>

Minnesota Department of Natural Resources. 2015b. Mammals of Minnesota. Division of Wildlife, Minnesota Department of Natural Resources, St. Paul, Minnesota.
[Http://www.dnr.state.mn.us/mammals/index.html](http://www.dnr.state.mn.us/mammals/index.html)

Minnesota Valley National Wildlife Refuge Act of 1976, Pub. L. no. 94-466.

Otis, D.L., J.H. Schulz, D.A. Miller, R. Mirarchi, and T. Baskett. 2008. Mourning dove (*Zenaida macroura*). In the Birds of North America, No. 117. Philadelphia: The Academy of Natural Sciences; Washington, D.C., USA.

Sauer, J. R., J. E. Hines, J. E. Fallon, K. L. Pardieck, D. J. Ziolkowski, Jr., and W. A. Link. 2014. The North American Breeding Bird Survey, Results and Analysis 1966 - 2012. Version 02.19.2014 USGS Patuxent Wildlife Research Center, Laurel, MD. [Http://www.mbr-pwrc.usgs.gov](http://www.mbr-pwrc.usgs.gov)

Seamans, M. E. 2015. Mourning dove population status, 2015. U.S. Fish and Wildlife Service, Washington, D.C.

U.S. Fish and Wildlife Service. 1990. American woodcock management plan. U.S. Fish and Wildlife Service. Washington, D.C.

U.S. Fish and Wildlife Service. 1997. National Wildlife Refuge Improvement Act of 1997, Pub. L. no. 105-57.

U.S. Fish and Wildlife Service. 2000. "603 FW2, Compatibility." In U.S. Fish and Wildlife Service Policy Manual. Washington DC.

U.S. Fish and Wildlife Service. 2004. Comprehensive Conservation Plan and Environmental Assessment for Minnesota Valley National Wildlife Refuge and Wetland Management District. USFWS, Region 3, Fort Snelling, MN. 284 pp.

U.S. Fish and Wildlife Service. 2013a. Refuge annual performance plan. U.S. Fish and Wildlife Service, Washington, D.C.

U.S. Fish and Wildlife Service. 2015. Waterfowl population status, 2014. U.S. Department of the Interior, Washington, D.C. USA. 79 pp.

Waller, D. M., W.S. Alverson. 1997. The white-tailed deer: A keystone herbivore. Wildlife Society Bulletin. 25(2). 217-226 pp.

APPENDIX A – UNIT MAPS

The following maps show landmarks, parking lots, and current hunting activities for 11 of the 12 Refuge Units (except Round Lake Unit).

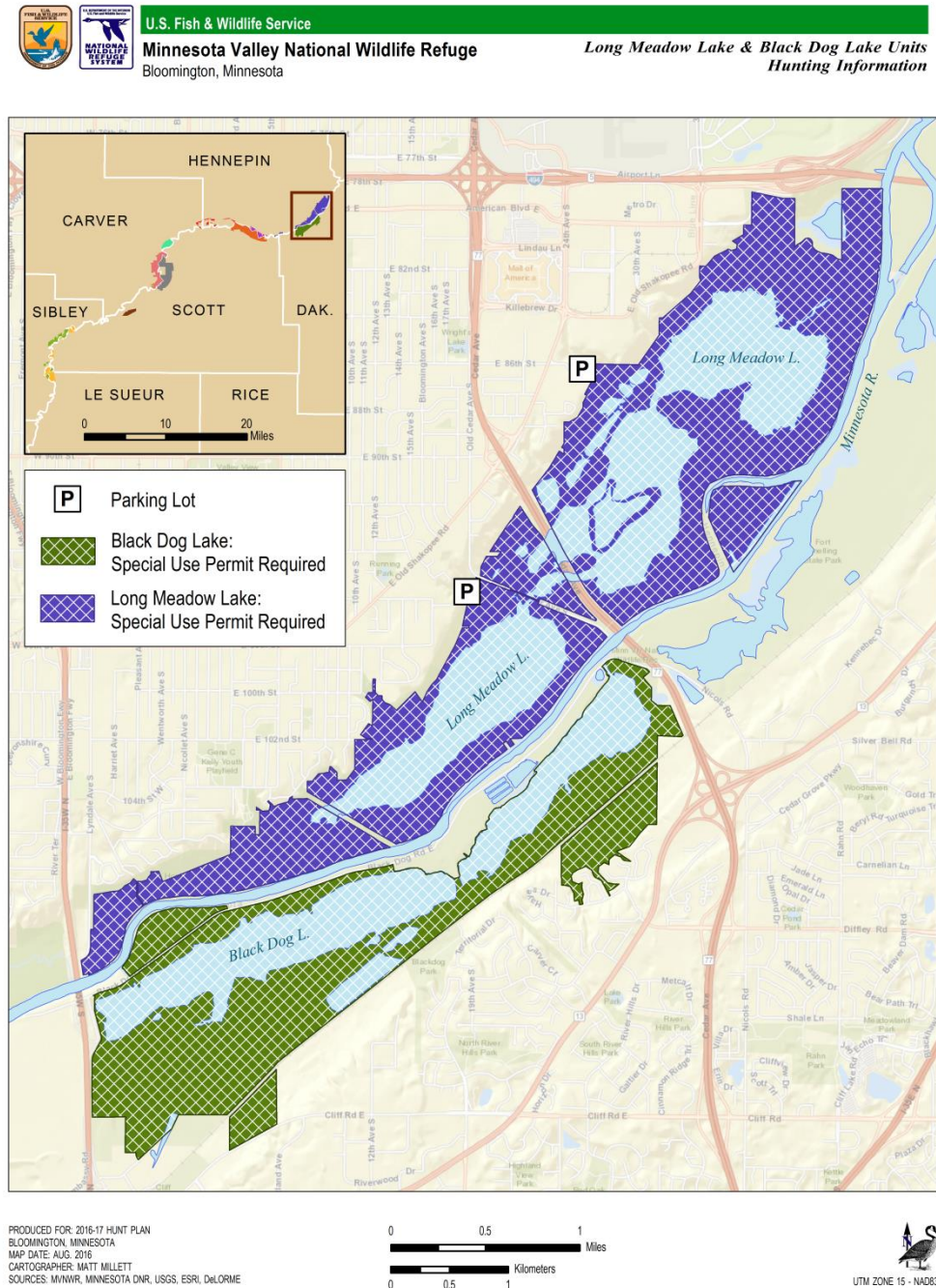


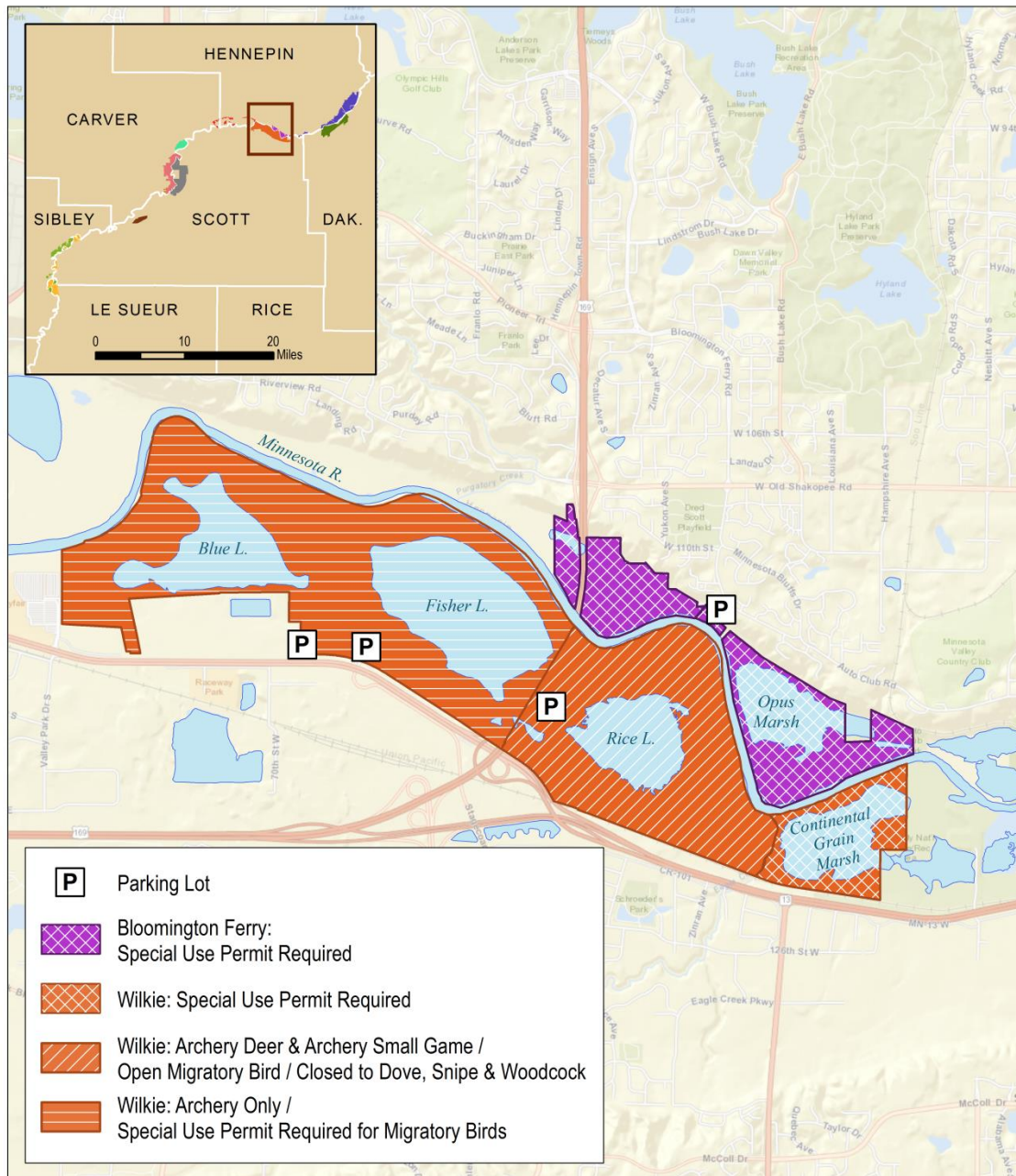
Figure A-1: Long Meadow and Black Dog Unit Current Hunting Opportunities.



U.S. Fish & Wildlife Service

Minnesota Valley National Wildlife Refuge
Bloomington, Minnesota

*Bloomington Ferry & Wilkie Units
Hunting Information*



PRODUCED FOR: 2016-17 HUNT PLAN
BLOOMINGTON, MINNESOTA
MAP DATE: AUG. 2016
CARTOGRAPHER: MATT MILLETT
SOURCES: MWNWR, MINNESOTA DNR, USGS, ESRI, DeLORME

0 0.5 1 Miles
0 0.5 1 Kilometers



UTM ZONE 15 - NAD83

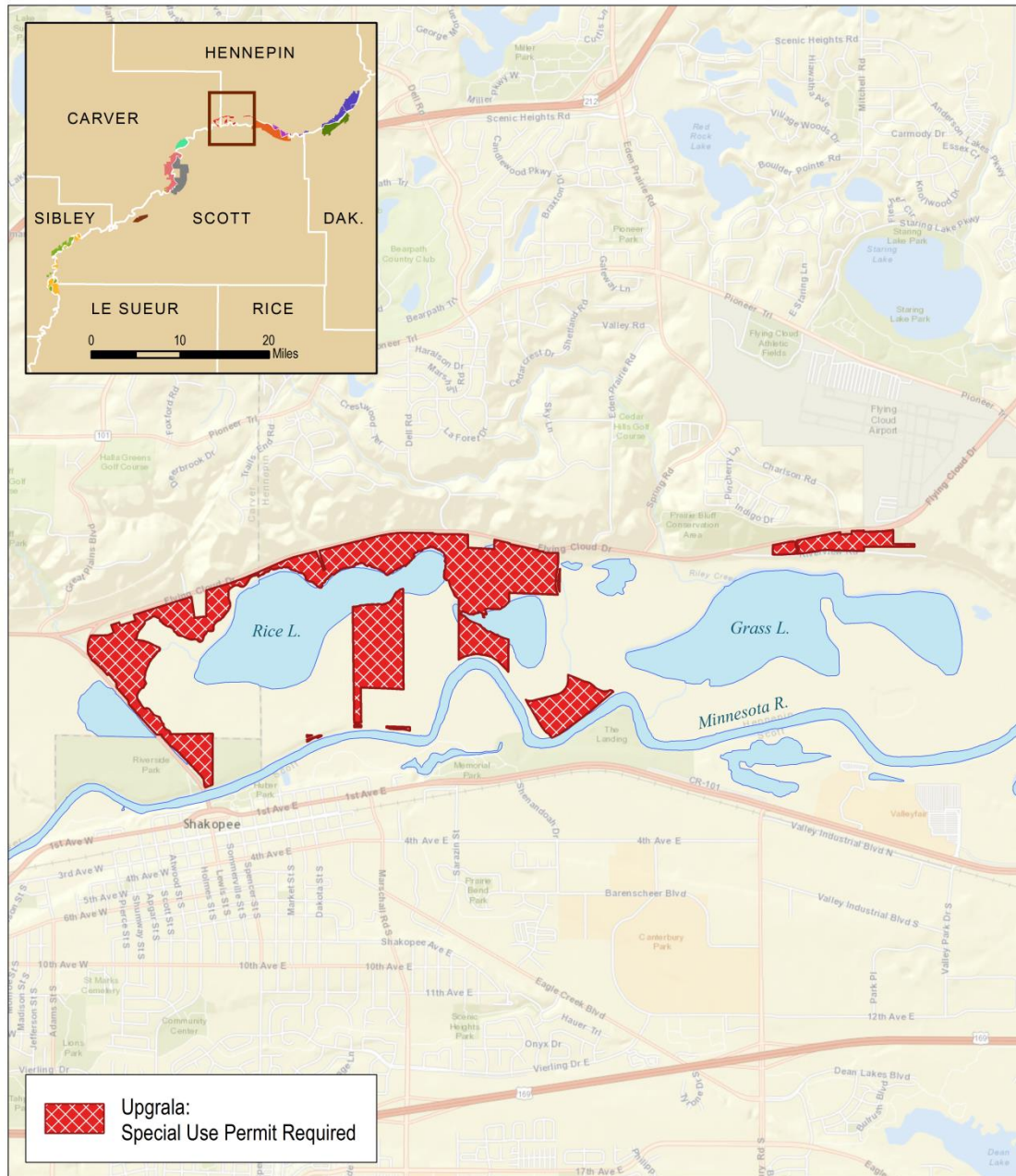
Figure A-2: Bloomington Ferry and Wilkie Units Current Hunting Opportunities.



U.S. Fish & Wildlife Service

Minnesota Valley National Wildlife Refuge
Bloomington, Minnesota

*Upgrala Unit
Hunting Information*



PRODUCED FOR: 2016-17 HUNT PLAN
BLOOMINGTON, MINNESOTA
MAP DATE: AUG. 2016
CARTOGRAPHER: MATT MILLETT
SOURCES: MWNHR, MINNESOTA DNR, USGS, ESRI, DeLORME

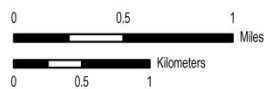


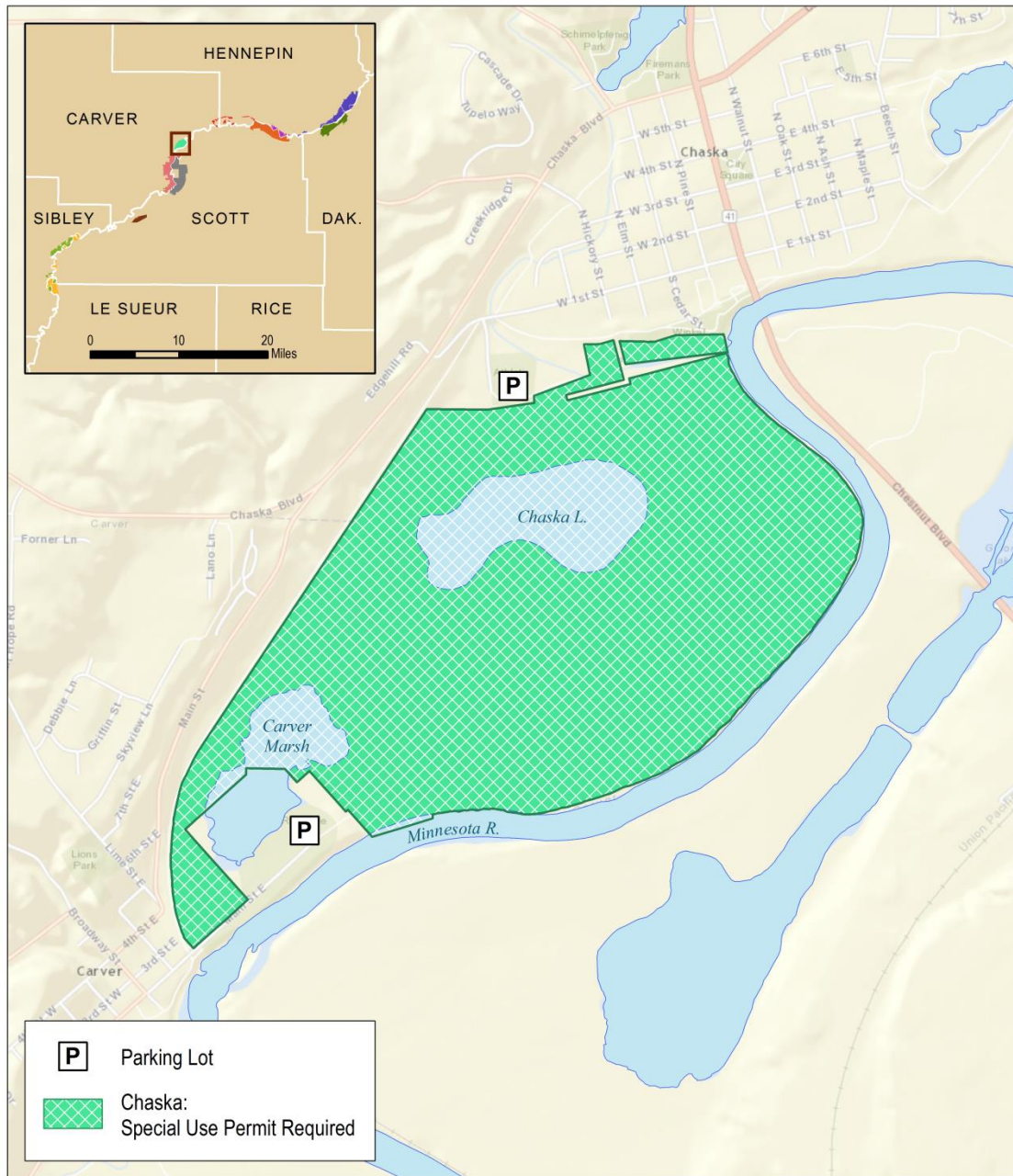
Figure A-3: Upgrala Unit Current Hunting Opportunities.



U.S. Fish & Wildlife Service

Minnesota Valley National Wildlife Refuge
Bloomington, Minnesota

*Chaska Unit
Hunting Information*



PRODUCED FOR: 2016-17 HUNT PLAN
BLOOMINGTON, MINNESOTA
MAP DATE: AUG. 2016
CARTOGRAPHER: MATT MILLETT
SOURCES: MWNWR, MINNESOTA DNR, USGS, ESRI, DeLORME

0 0.25 0.5 Miles
0 0.25 0.5 Kilometers

UTM ZONE 15 - NAD83

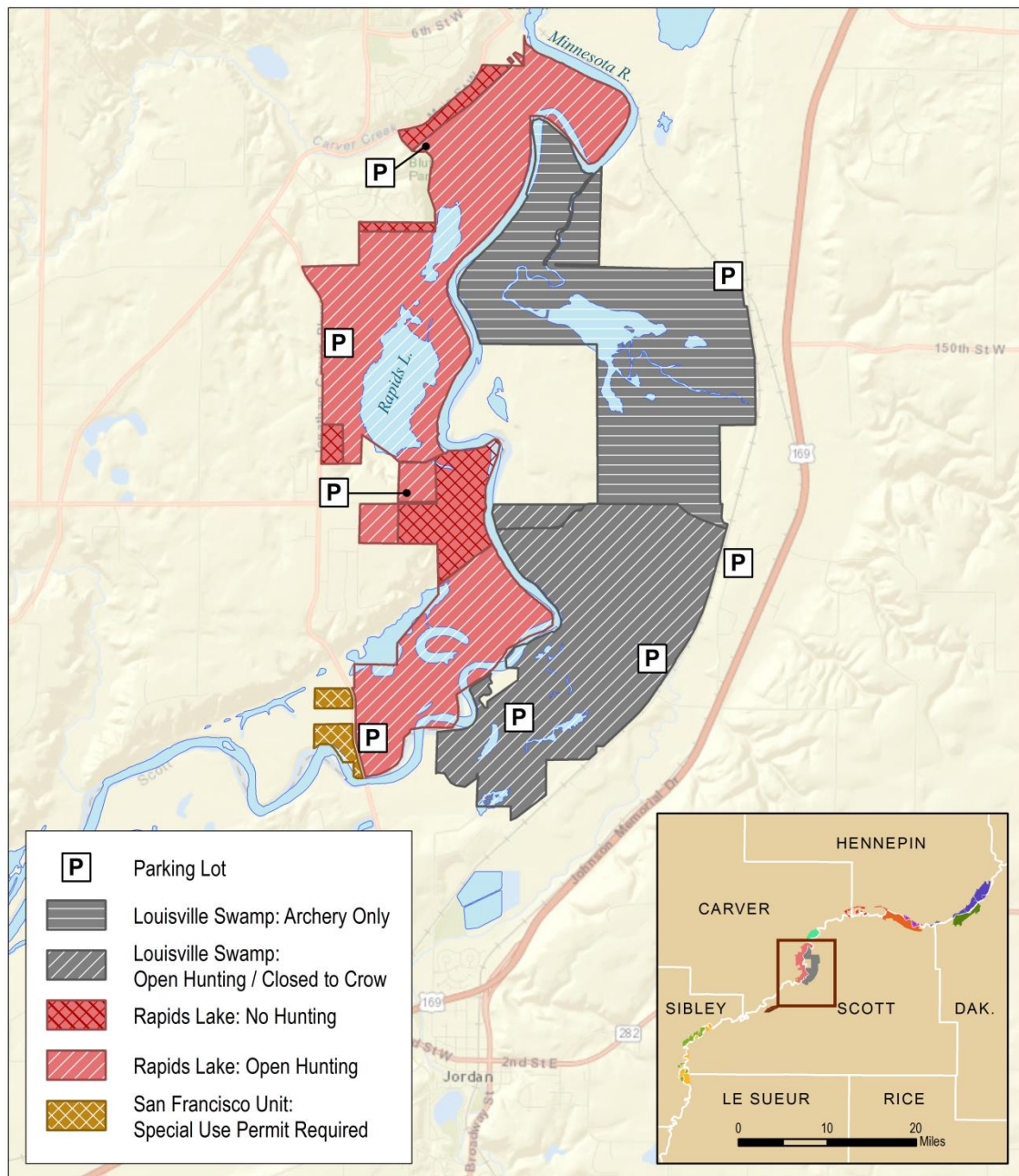
Figure A-4: Chaska Unit Current Hunting Opportunities.



U.S. Fish & Wildlife Service

Minnesota Valley National Wildlife Refuge
Bloomington, Minnesota

*Rapids Lake, Louisville Swamp
& San Francisco Units
Hunting Information*



PRODUCED FOR: 2016-17 HUNT PLAN
BLOOMINGTON, MINNESOTA
MAP DATE: AUG. 2016
CARTOGRAPHER: MATT MILLETT
SOURCES: MWNWR, MINNESOTA DNR, USGS, ESRI, DeLORME

0 0.5 1 Miles
0 0.5 1 Kilometers

UTM ZONE 15 - NAD83

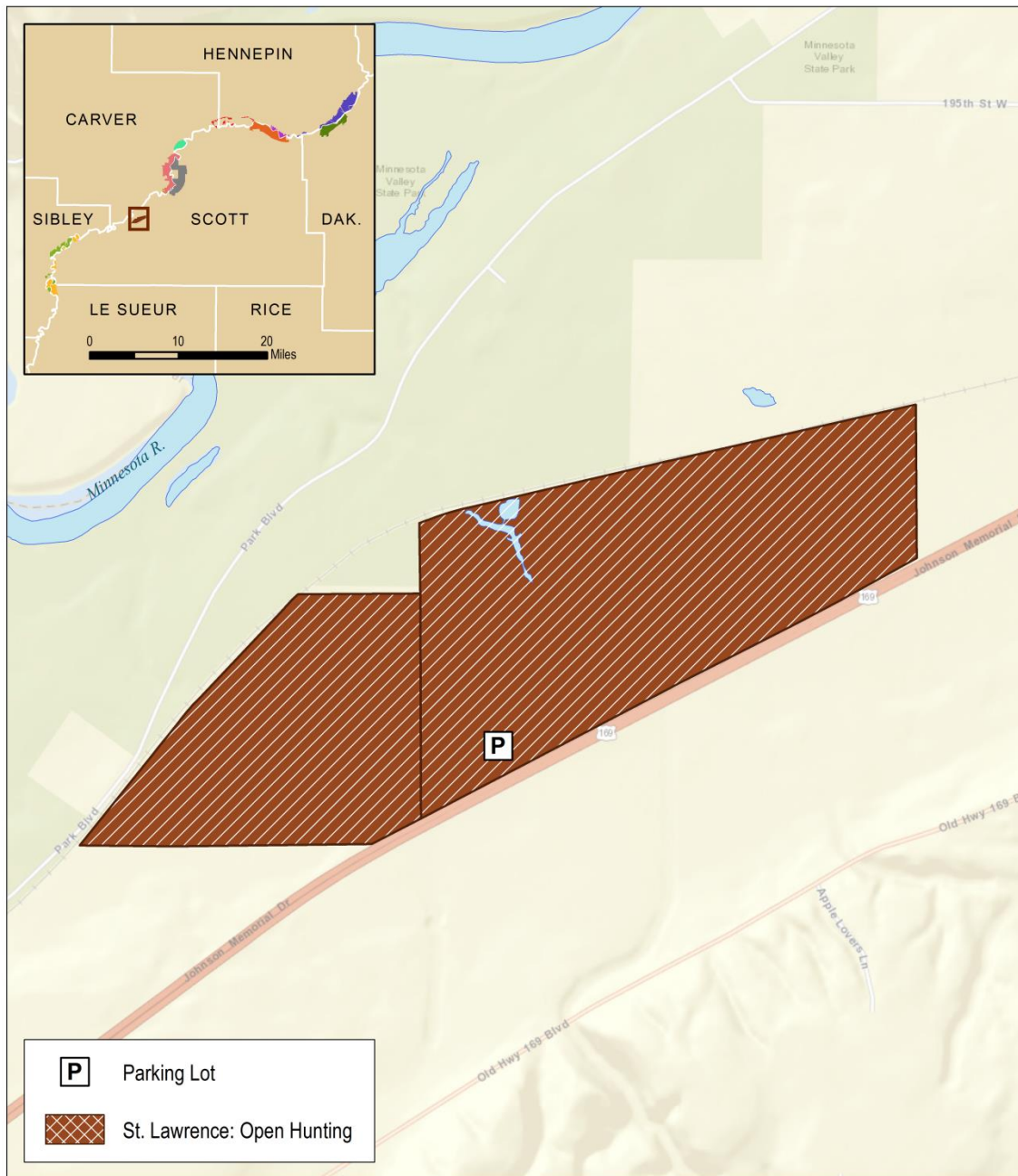
Figure A-5: Rapids Lake and Louisville Swamp Units Current Hunting Opportunities.



U.S. Fish & Wildlife Service

Minnesota Valley National Wildlife Refuge
Bloomington, Minnesota

*St. Lawrence Unit
Hunting Information*



PRODUCED FOR: 2016-17 HUNT PLAN
BLOOMINGTON, MINNESOTA
MAP DATE: AUG. 2016
CARTOGRAPHER: MATT MILLETT
SOURCES: MNNWR, MINNESOTA DNR, USGS, ESRI, DeLORME

0 0.25 0.5
Miles
0 0.25 0.5
Kilometers



UTM ZONE 15 - NAD83

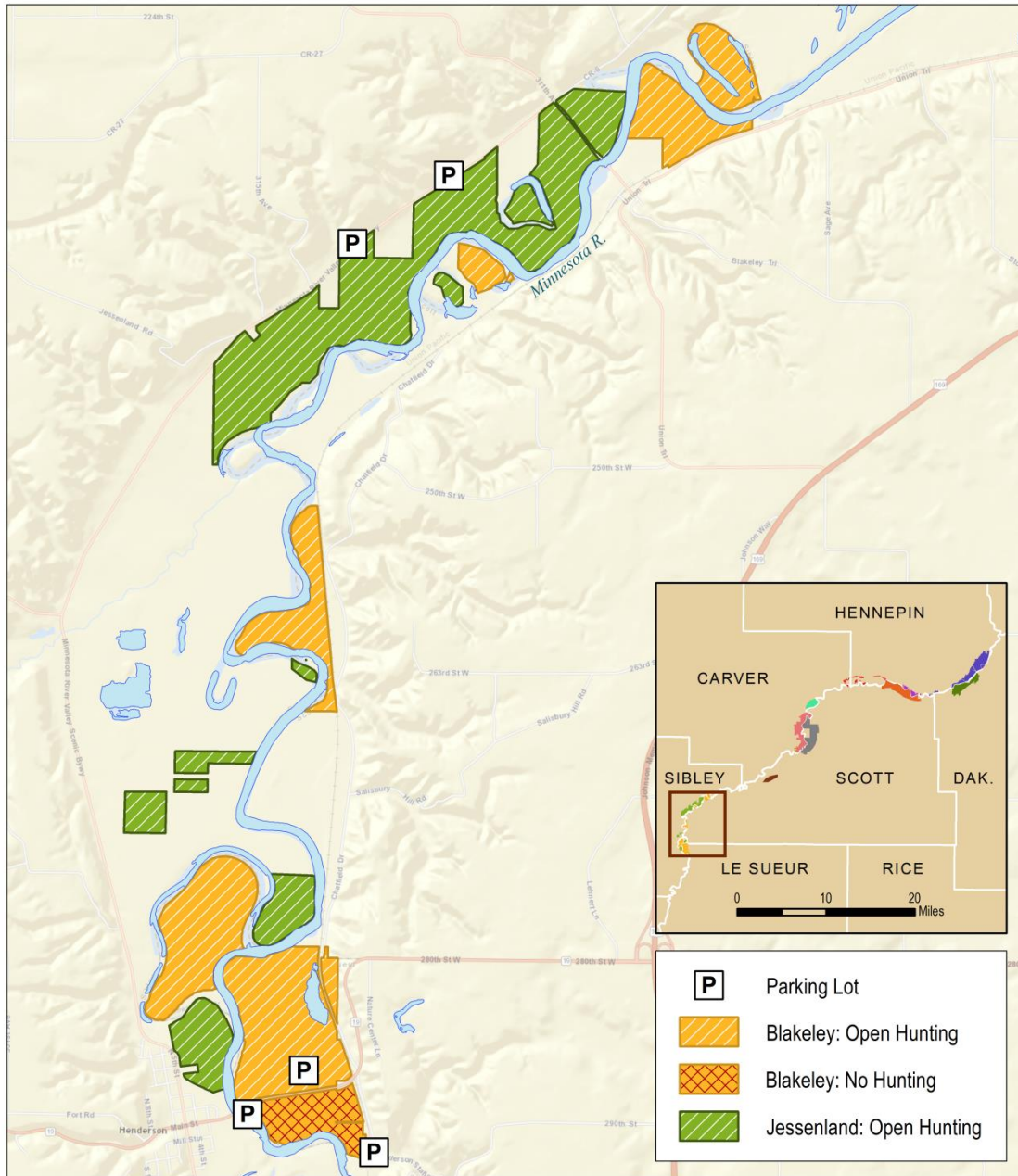
Figure A-6: St. Lawrence Unit Current Hunting Opportunities.



U.S. Fish & Wildlife Service

Minnesota Valley National Wildlife Refuge
Bloomington, Minnesota

*Blakeley & Jessenland Units
Hunting Information*



PRODUCED FOR: 2016-17 HUNT PLAN
BLOOMINGTON, MINNESOTA
MAP DATE: AUG. 2016
CARTOGRAPHER: MATT MILLETT
SOURCES: MWNWR, MINNESOTA DNR, USGS, ESRI, DeLORME

0 0.5 1 Miles
0 0.5 1 Kilometers

UTM ZONE 15 - NAD83

Figure A-7: Jessenland and Blakeley Units Current Hunting Opportunities.